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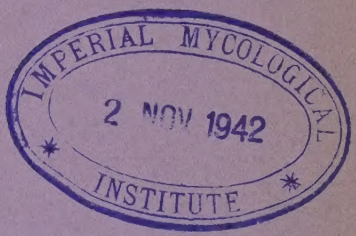

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ERRATA.

Vol. **12**, p. 430. McCARTY, M., & TILLET, W. S. (1941). for " . . . **Effect of Sulfapyridine on the Leukocytic Action of Benzene** ", read " . . . **Effect of Sulfapyridine on the Leukotoxic Action of Benzene** ".

p. 440. BLAZHEVICH, I. V. (1938). for " only eight showing titres over 1 : 400 ", read " only 13 showing titres over 1 : 400 ".

NOTE:—In certain cases it is not possible to check references in the original publication. Such references are marked with an asterisk.

In order to economise in the use of paper, the *Veterinary Bulletin* is now printed in smaller type and with deeper and wider columns. There has been no reduction in the number of abstracts.

Bulletins on disease subjects written for farmers and " popular " articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature, are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius*, being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin*.

TECHNICAL REVIEWS

(1) **" Antibacterial Agents derived from Micro-Organisms."**

(2) **" The Present Position of Phenothiazine as an Anthelmintic."**

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THE

VETERINARY BULLETIN

Vol. 12.] November, 1942. [No. 11.

DISEASES CAUSED BY BACTERIA AND FUNGI

POUNDEN, W. D. (1942). **Suggestions for a Mastitis Control Program for Use by Practicing Veterinarians.** —*N. Amer. Vet.* **23.** 309–313.

P. differentiates four clinical types of mastitis in cows, *viz*, acute and chronic parenchymatous and acute and chronic catarrhal, all due to streptococcal infection. He describes the salient points of each and advises how each type should be treated.—J. A. GRIFFITHS.

*HÖRDEMANN, W. (1939). Ueber das Vorkommen von Galterregern in gesunden Kuheutern und deren Bedeutung für eine spätere Erkrankung. **[Occurrence of Mastitis Streptococci in Healthy Udders and their Importance with regard to Later Infection].**—*Inaug. Diss., Giessen.* pp. 44. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 135].

A bacteriological examination was made of milk samples taken from the apparently healthy udders, as evidenced by clinical examination, of 127 cows. Two of these were shown to excrete mastitis streptococci in their milk, one for a period of a fortnight and the other for as long as nine months.

Mastitis streptococci were also demonstrated in samples from 11 clinically healthy quarters of cows affected with mastitis in the remainder of their quarters. In two of these cases, quarters " healthy " at the time of the investigation later developed chronic mastitis. —M. LANDAU.

MORGAN, M. E., ANDERSON, E. O., & PLASTRIDGE, W. N. (1941–42). **Mastitis and the Plate Count of Milk. I. A Quantitative Study of the Growth of *Streptococcus agalactiae* in Various Plating Media. II. The Influence of *Streptococcus agalactiae* Mastitis upon the Standard Plate Count of Milk.**—*J. Milk Technol.* **4.** 245–252, and **5.** 67–76.

I. The growth of 20 freshly isolated cultures of *Str. agalactiae* grown in milk was used for a comparison of four different media, *viz*, 5% ox-blood agar, Edwards' crystal-violet aesculin ox-blood agar, and the new and old standard agar media recommended by the American Public Health Association. There was no significant difference between the counts on Edwards' medium and plain ox-blood agar, nor was there a significant difference in the number of colonies on the new and old standard media, but the numbers growing on the last two media were considerably lower than the average counts on the blood media. Also the mean exposed area of the colonies grown on the new standard medium was 420·3% larger than that of the colonies grown on the old standard medium.

II. A study was made on bulk samples of 93 herds to find out whether the presence of *Str. agalactiae*, which had previously been found to be present in one or more cows in these herds, contributed materially to the total plate count as used in ordinary quality tests. A table shows the total counts of each sample as determined by the old and the new standard media and the *Str. agalactiae* count by Edwards' medium. This organism comprised an average of only 3% of the total count, and only in a few high quality samples did it comprise over 20% of the total count.

It is therefore concluded that the presence of a few carriers of *Str. agalactiae* in a herd does not materially affect the milk count. Its presence is relatively more important in highly graded herds than in the average herd.

MATTICK, A. T. R., SHATTOCK, P. M. F., & JACOB, M. M. (1941). **The Relationship of Methods of Bacteriological Examination to the Eradication and Control of Mastitis (*Streptococcus agalactiae*). I. The Use of an Enrichment Technique in Revealing Streptococcal Infections of the Cow's Udder. II. *Streptococcus agalactiae* Infection in Heifers.**—*J. Dairy Res.* **12.** 139–154.

During an attempt to control mastitis on a field scale, various methods of examination were compared on 453 quarter samples of milk, and *Str. agalactiae* was isolated as follows. Plating the deposit from 5 ml. of milk on Edwards' aesculin crystal-violet blood agar, 10 times ; using Edwards' Na azide broth technique, 14 times ; streaking from the above broth on to crystal-violet blood agar plates, 20 times ; using a modified Hotis test, in which 9·5 ml. of milk were added to 0·5 ml. of bromcresol purple solution to give a final concentration of 0·025%, all the tubes being streaked out, after incubation, on plates whether or not they showed any changes, 133 times. [It will be noted that twice as much milk was used in this last examination as in Edwards' plating technique.] Experiments indicated that Edwards' plating technique might fail to detect as many as 100 organisms per ml. It was, however, concluded that even with enrichment methods, frequent examinations were necessary to detect all infected cattle. It was found that small numbers of streptococci sometimes persisted in the udder for long periods, but routine plate examination together with segregation of infected cows and good stable hygiene reduced the incidence of mastitis to very small proportions.

The milk of 337 first-calf heifers was examined by Edwards' technique and *Str. agalactiae* was isolated from 21% during the first lactation and from 4·5% within the first 10–20 days after calving, whilst the animals were still isolated from the adult herd.

Str. dysgalactiae and *Str. uberis* were each isolated 20 times in the examination of 449 milk samples, but there was no evidence of mastitis.

It is concluded that if the carrier state is widespread, management, hygiene, and avoidance of injury to the udder assume a new significance. The value of frequent use of the strip cup is also stressed.—JOHN FRANCIS.

DAVIS, J. G. (1942). **Bacteriological Methods for the Large-scale Detection of Mastitis.**—*Vet. Rec.* **54.** 145–147.

D. holds the opinion that the method of MINETT, STABLEFORTH & EDWARDS for testing dairy herds throughout the country, whilst ideal, is not practicable for wholesale systematic testing. He suggests that afternoon samples of milk should be taken by trained workers and that a non-inhibitory medium to embrace mastitis organisms other than *Streptococcus agalactiae* be used for the test. No plate should be submitted to visual examination alone and he discounts over-emphasis on the haemolytic reaction of any colony. D. then outlines his technique for such bulk testing of milk samples. Two tests, plating on blood agar or on bromcresol-purple lactose chalk agar and the resazurin-rennet test are made on the samples within three hours after milking or after refrigeration overnight. Either one or two plates per sample are poured and examined after 48 hours' incubation. Suspect colonies are picked off into yeast litmus milk and examined after another 48 hours' incubation and then tested for catalase. These tests should be indicative of any *Str. agalactiae*, staphylococcal, or micrococcal infections. In all other cases further tests are necessary and choice can be made of several such tests which are tabulated. The diagnosis of mastitis is made by the isolation and typing of mastitis organisms, except in the case of staphylococcal and micrococcal mastitis when colony counts are also taken into consideration. The one-hour resazurin-rennet test technique is again outlined.

D. next indicates the probable amount of work two trained assistants could do on samples received for test on five days per week and the income therefrom at 3/- per cow. The cost of imposing such a scheme for countrywide use is estimated at £450,000 per annum (bi-annual tests of all dairy herds) against an estimated loss from mastitis of £3,000,000 per annum. D. urges that movements of infected animals from farm to farm should be effectively controlled as a first step in attacking mastitis. [It seems doubtful if all the extra supervisory and kitchen staffs, accommodation, apparatus, etc., necessary for this wholesale testing have been fully considered in D.'s estimate of cost.]—C. V. WATKINS.

GALLO, P. (1940). Estudios experimentales sobre " Streptococcus Agalactiae " y tentativa de clasificación. **[Studies on *Str. agalactiae* and its Classification].**—*Rev. Med. vet. Parasit., Caracas.* **2.** Nos. 3/4. 51–55.

G. gives the results of studies of 67 strains of streptococci from cases of bovine mastitis. The conventional tests were used.—MILLER WATSON.

BRYAN, C. S. (1942). **The Bacterial Content of Goat Milk.**—*Amer. J. vet. Res.* **3.** 92–95.

Blood-agar culture and the microscopic examination of milk samples after incubation for 12–15 hours showed that, of 380 goats in 15 herds, 9 (2·3%) were infected with streptococcal mastitis, 5 (1·3%) with staphylococcal mastitis, and 2 (0·5%) were affected with non-infectious mastitis. Methylene blue, resazurin, and standard plate-count tests showed that milk from goats with either streptococcal or staphylococcal mastitis was of much lower quality than milk from non-infected goats ; this was particularly the case with streptococcal mastitis where only 40% of the infected goats gave class I methylene-blue milk, 37% class I resazurin milk, and 50% yielded milk with a bacterial count of more than 1,000. Corresponding figures for non-infected animals were 97·5%, 94%, and 4% and for animals with staphylococcal mastitis 56%, 40%, and 12%.—N. J. SCORGIE.

KULESKO, I. (1939). O serologicheskoĭ klassifikatsii streptokokkov, patogennykh dlya loshadeĭ. **[Serological Classification of the Streptococci Pathogenic to Horses].**—*Sovyet. Vet.* No. 1. pp. 36–37.

K. discusses studies he made of streptococci from horses, using the Lancefield method. He does not give any details concerning grouping.—A. MOLDAWSKY.

*SONNENBRODT. (1941). Ist die Druse zu verhindern ? **[How to Prevent Strangles].**—*Dtsch. Warmblut.* **36.** 36–39. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 370].

An article, written possibly by a layman, which claims that the prevention of strangles is largely a matter of sound hygiene, and advocating that rivanol solution should be sprayed into the nose as soon as the disease appears.—M. LANDAU.

I. BERNHEIMER, A. W., & PAPPENHEIMER, A. M., Jr. (1942). **Factors Necessary for Massive Growth of Group A Hemolytic Streptococcus.**—*J. Bact.* **43.** 481–494.

II. BERNHEIMER, A. W., GILLMAN, W., HOTTLE, G. A., & PAPPENHEIMER, A. M., Jr. (1942). **An Improved Medium for the Cultivation of Hemolytic Streptococcus.**—*Ibid.* 495–498.

I. A quantitative study of the growth of group A streptococci showed that optimum growth was obtained with the following modifications of gelatin hydrolysate medium [see PAPPENHEIMER & HOTTLE—*V. B.* **11.** 423]. (1) Increase of glucose concentration to 3–4% ; (2) frequent neutralization of the lactic acid formed ; (3) reduction in total salt concentration to a minimum ; (4) use of 2% of sulphuric-acid-hydrolysed casein in place of 1% of hydrochloric-acid-hydrolysed gelatin, and (5) increase in calcium pantothenate concentration to 4 mg. per litre.

II. This article gives details for the preparation of the medium referred to in I.—ISOBEL W. BURTON.

EVANS, A. C. (1941). **Cross Protection Between Heterologous Agglutinogenic Types of Beta Hemolytic Streptococci.**—*J. Immunol.* **42.** 15–34.

A study was made of 43 " lactose-deficient " strains of Lancefield's group A haemolytic streptococci of human origin, which when first isolated failed to ferment lactose or fermented it only slightly, although some of the strains later developed the ability to ferment lactose. These 43 strains included four received from GRIFFITH, representing his serologic types 14, 15, 18, and 19. When tested for agglutination in the four type-specific antisera prepared with the four Griffith strains, 34·9% of the lactose-deficient strains fell into type 18, whereas none of a group of 43 strains from similar sources, capable of fermenting lactose, fell into type 18, indicating that there is a correlation between lactose deficiency and agglutinogenic substance in type 18. Contrary to the usual behaviour of group A strains, five of the original 43 strains when tested, readily attained a high virulence for mice by passage.

All antisera produced in rabbits by strains of the lactose-deficient groups of types 14, 15, 18, or 19 gave cross-protection against heterologous strains, and it is

suggested that strains of the lactose-deficient group may possess a broad antigenic structure in the substance responsible for the production of protective antibodies, and that there may be a correlation between high degree of natural virulence for mice and broad antigenic structure. The wide range of protection was exemplified by strain 654 of type 15, which protected mice against infection with seven out of ten heterologous strains tested.—E. COTCHIN.

SEVAG, M. G., & SHELBURNE, M. (1942). **The Respiration of Streptococcus pyogenes. I. Optimal Conditions of Respiration. II. The Inhibition of Respiration and Growth by Sulfanilamide ; the Inhibition of Respiration by Hydroxylamine and its Sulfonamide and Other Derivatives.**—*J. Bact.* **43.** 411–420 and 421–445.

SEVAG, M. G., & SHELBURNE, M. (1942). **The Respiration of Streptococcus pyogenes and Pneumococcus Type I. III. Bearing of Respiration on Existing Theories of the Mechanism of the Action of the Chemotherapeutic Agents.**—*Ibid.* 447–462.

I. The aerobic respiration of washed suspensions of β-haemolytic streptococci was found to be of a very low order. Addition of yeast extract, normal serum, or both, or of whole defibrinated blood to young, actively growing cultures increased the oxygen consumption and anaerobic glycolysis in the presence of glucose. The authors were unable to demonstrate the accumulation of hydrogen peroxide under aerobic conditions, and consider that the H_2O_2 may be utilized in the nascent state by a secondary reaction, or as soon as it is formed.

II. Sulphanilamide, and hydroxylamine and its sulphonamide derivatives were all found to exercise a strong inhibitory effect on the aerobic and anaerobic respiration of *Str. pyogenes*, under conditions most favourable for active respiration. Inhibition took place even in the absence of growth, and was directly related to the concentration of the drug.

III. The authors carried out experiments which indicated that sulphanilamide produces its chemotherapeutic effect by interfering with the respiratory enzymes of the organisms, and not by an "anti-catalase" action.—ISOBEL W. BURTON.

SUGANUMA, T. (1940). **Studies on the Toxins of Haemolytic Streptococci. Primary Report. On the Protein of Bacterial Bodies. Secondary Report. On the Toxic Substances in the Culture Supernatant Fluid with Special Reference to the Lethal Toxin.**—*Tohoku J. exp. Med.* **38.** 554–576, and **39.** 180–204. [In English].

Some of the properties of the bacteria and of the supernatant fluid in a 0·2% glucose-broth culture (36 hours, 37°C.) of a mastoiditis strain of group A haemolytic streptococcus were studied. The bacteria, collected by centrifugation, were shaken with distilled water both before and after being ground for a long time with sand in a quartz mortar. Each of the extracts (I and II) contained about a quarter by weight of the bacterial bodies. Both extracts were lethal to mice, and caused cutaneous reactions in rabbits, g. pigs, and goats. These properties were apparently due to the protein fraction (PF), which could be isolated from each extract by adding HCl, and which formed about half of the extract by weight. PF from extract II was somewhat more potent than PF from extract I. A carbohydrate fraction (CF) was present in each extract also, but in very small amounts, and its biological properties could not be determined.

The culture supernatant fluid was divided into an acid-precipitable fraction (A.P.F.) and an acid-soluble fraction (A.S.F.), by acetic acid. A.P.F. closely paralleled PF in properties, suggesting that a part of the bacterial protein had been lost into the culture medium.

An attempt was made to separate A.S.F. into pure carbohydrate and protein fractions, but the carbohydrate fraction always contained protein. Results suggested that the lethal toxin of the haemolytic streptococcus was not contained in the carbohydrate fraction. The particular fractions which were lethal to mice did not always show a strong skin reaction.—E. COTCHIN.

KAWASHIMA, H., & NAKAMURA, N. (1938). Ueber eine neue durch Staphylokokkus pyogenus citrius hervorgerufene ödematöse Krankheit der Hühnerküchen. **[An Oedematous Disease of Chicks caused by *Staphylococcus pyogenes citrius*].**—*J. Jap. Soc. vet. Sci.* **17.** 118–137. [In German : Japanese summary pp. 291–292 of pt. I].

A disease of chicks of 6–9 weeks old, first observed in Japan in 1932, is described. A marked oedema of the wing occurs with blood-stained serous fluid under the skin. The disease, which is infectious, was found to be sporadic. Twelve outbreaks were investigated. In every case a staphylococcus was isolated with which chicks could be artificially infected by subcutaneous inoculation, the same clinical picture being set up. The strain was also pathogenic for mice, g. pigs, rabbits, and pigeons. Feeding the culture or inoculation by scarification of the skin failed to reproduce the disease.

In two cases an obligatory anaerobe which was considered to be *Clostridium septicum* was also isolated, but it is assumed to be a saprophyte or symbiont.

—D. L. ROBARTS.

JOHLIN, J. M., & RIGDON, R. H. (1941). **The Detoxification of Staphylococcal Toxin by Adsorption on Organic Liquids.**—*J. Immunol.* **41.** 233–240.

The authors found that when staphylococcal toxin was shaken with ether or chloroform, acting as adsorbing agents, in nitrogen-filled glass tubes, surface catalysis led to denaturation of the toxin, with rapid and progressive decrease of its haemolytic and dermonecrotic activities : the toxin also became less soluble. If the mixture was allowed to stand for a time after treatment, the residual toxicity was still further reduced. The toxin, although almost completely detoxified by prolonged treatment, appeared to retain some, albeit only minor, antigenic power.—E. COTCHIN.

FARRELL, L. N. (1941). **The Potency of Staphylococcal Toxoid.**—*J. Immunol.* **41.** 119–126.

Several commercial preparations of toxoid were found to vary widely in potency, as shown *in vitro* by their Lb/ml values (Lb/ml = no. of units of α-antitoxin combining with 1 ml. toxoid). The National Institute of Health has proposed a "minimum requirements" test of antigenic potency, which, simply stated, demands that the given toxoid shall be capable of producing a thirtyfold increase in the antitoxin content of the pooled sera of eight rabbits. F. subjected some of these commercial toxoids to the recommended test, and from a careful analysis of his results, concluded that the test might, in fact, allow inadequate preparations to pass. F. suggests that, in doubtful cases, the antitoxin increase in the individual rabbit sera must be considered, and that the Lb value of the toxoid should be determined as a further check.—E. COTCHIN.

*IVANOVICS, G. (1940). **[Recent Research on the Antigenic Structure of *B. anthracis*].**—*Orv. Arch.* **49.** 285–293. [Translation of abst. in *Jber. Vet.-Med.* **69.** 102].

The specific immune polysaccharide of the anthrax bacillus was found to be a polymer of galactose and

acetylglucosamine in equi-molecular proportions. On account of the similarity of its chemical properties with those of the specific immune substance of human red blood corpuscles of group A and with the capsule hapten of pneumococcus type XIV, a specific serological relationship between these three substances was expected : this was later found to hold good.

KOLESOV, S. G. (1941). Poluchenie protivosibireyazvennoĭ syvorotki metodom hiperimmunizatsii loshadeĭ kul'turoĭ B. anthracis s kvastsami. [**Preparation of Anthrax Antiserum by Hyperimmunization of Horses with Alum-Treated** *Bacillus anthracis*].—*Veterinariya, Moscow.* No. 1. pp. 44–50. [French summary].

Horses were immunized by the second Tsenkovskiĭ vaccine [see *V. B.* **5.** 572.] and afterwards hyperimmunized by a 24-hour-old anthrax broth culture treated with 0·2% alum. The preventive and therapeutic properties of their sera were shown in rabbits to be superior to those of the standard serum. Of 272 horses so immunized, 88% yielded a highly potent serum. The immunization and hyperimmunization of horses by this method could be accomplished in 41–49 days as compared with 90 days by the usual method. —A. MOLDAWSKY.

HUMPHREYS, F. A., & GIBBONS, R. J. (1942). **Some Observations on Corynebacterial Infections, with Particular Reference to their Occurrence in Mule Deer, Odocoileus hemionus, in British Columbia.**—*Canad. J. comp. Med.* **6.** 35–45.

Corynebacterium ovis was recovered from pathological conditions in four deer in British Columbia. The organism was indistinguishable from strains of *C. ovis* recovered from sheep. One deer was exposed to infection by scarification of the skin and another by drenching with sheep strains. Both animals became infected. Two sheep were similarly infected with deer strains, but the sheep appeared to be more resistant to deer strains than the deer to sheep strains. A lamb, however, injected by the intravenous route with a deer strain died in five days with an acute pulmonary infection. G. pigs and rabbits were highly susceptible to infection, while rats and magpies were resistant to oral administration but susceptible to infection by the intraperitoneal route ; fitches were resistant to the former and fairly resistant to the latter method. Chickens were not susceptible. Engorged female ticks (*Dermacentor albipictus*) removed from infected deer were shown to be harbouring *C. ovis* and the larvae reared from similar females were also shown to be harbouring the infection, indicating that the organism had been hereditarily transmitted.—R. GWATKIN.

I. VERGE, J., & SENTHILLE, F. (1942). Rôle de *Corynebacterium equi* dans certaines adénites du porc simulant la tuberculose. [**Role of** *Corynebact. equi* **in Porcine Adenitis Resembling TB.**].—*C. R. Soc. Biol. Paris.* **136.** 273–274.

II. VERGE, J., & SENTHILLE, F. (1942). Caractères différentiels de *Corynebacterium equi*, agent de l'adénite pseudo-tuberculeuse du porc. [**Differential Characters of** *Corynebact. equi*, **Causal Agent of Pseudotuberculous Adenitis of Swine**].—*Ibid.* 295–296.

I. Bacteriological examination of submaxillary lymph node lesions of 16 pigs, regarded from naked-eye inspection as TB.-infected, gave cultures of *Corynebact. equi* in four cases. This is the first time that *Corynebact. equi* has been isolated in France, either from horses or swine.

II. *Corynebact. equi*, occurring in TB.-like lesions in pigs, may be confounded with some other bacteria. Like tubercle bacilli, it will grow on Löwenstein's medium after treatment with 15% acid, and the colonies of the two organisms are similar. *Corynebact. equi* grows more rapidly, grows better on ordinary media, and is not acid fast except in old cultures. It is differentiated from *Corynebact. ovis* by its lack of fermenting powers, and from *Corynebact. pyogenes* by its proteolytic action. *Corynebact. equi* is nonpathogenic for rabbits, g. pigs, sheep, and dogs.—J. G. CARR.

*BÜRGI, O. (1941). Ueber Tuberkulose der Pferde. [**TB. in the Horse**].—*Schweiz. med. Wschr.* pp. 440–441. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). 140. 171].

A review based on 150 published cases of equine TB. in Europe during the last 50 years. Typical features are described.

EICKMANN, H. (1942). Erfahrungen mit dem Rindergesundheitsdienst. [**Experiences with the Cattle Health Service**].—*Tierärztl. Rdsch.* **48.** 72–75, and 87–91.

E. describes work done by the cattle health service in the Rhine Province since 1938. It has been concerned mostly with control and eradication of bovine TB., the scheme being voluntary and organized on a local dairy district basis. Three dairy districts were selected and attempts are being made to free them of TB. Methods used are the intradermal tuberculin test plus disposal of reactors, supported by a premium of 1 pfennig per litre for milk from TB.-free herds. All the work is done by special full-time veterinarians, who also undertake educational work in their appointed districts. Herds are classed as A, B, or C (uninfected, lightly infected, and heavily infected respectively). The best district, starting with 89% of clean herds, became completely TB.-free in two years (143 herds). The second started with 58% class A herds, 24% B, and 18% C, becoming in two years 67% A, 16% B, and 16% C. The third started with 28% A, 19% B, and 53% C, becoming after three years 45% A, 15% B, and 40% C. These results are considered to be very promising.

Technical points arising out of the work are discussed in detail and suggestions for improvements are made.—J. E.

OTTOSEN, H. E. (1941). **Some Differential Diagnostic Problems Concerning the Pathologic Anatomical Demonstration of Tuberculosis.**—*Skand. VetTidskr.* **31.** 257–282. [In English].

In some areas of Denmark, bovine TB. has been suppressed or eradicated ; accordingly, more careful attention has had to be paid to those disease conditions which clinically or at P.M. examination resemble TB. When TB. is found at an abattoir in Denmark, the history of the case is investigated and any necessary control measures on the farm concerned are put into operation. Thus an error in diagnosis in an abattoir may involve the field worker in unnecessary testing of the herds in question. Because of this, specimens simulating TB. from animals affected with these diseases have reached the State Serum Institute for special examination and in this article, O. describes some in detail. He divides them into true tumours, so-called "vaccination nodules", and subsidiary conditions.

The true tumours comprised, in cattle, four examples of adenocarcinoma and one each of squamous-celled carcinoma, haemangio-endothelioma, round-celled sarcoma and spindle-celled sarcoma, together with one case of haemangio-endothelioma in the horse and a carcinoma of the accessory thyroid gland in a dog. In all these cases either the clinical picture or the P.M. findings or both were suggestive of TB., especially in

the several examples in the ox of nodular metastases scattered diffusely over the pleura and peritoneum.

In regard to the so-called " vaccination nodules ", it is recalled that immunization against foot and mouth disease has been known to set up tuberculosis at the site of the inoculation. This sequel is quite rare and the condition has a characteristic clinical and P.M. appearance. Much more commonly a post-vaccination nodule (F. & M. vaccine) appears which, although non-specific in character, simulates true tuberculous infection, so that many examples have been submitted for further examination. O. gives details of several cases and believes that they are caused by the formaldehyde fraction of the vaccine.

The other conditions described include nonspecific miliary abscesses and pulmonary actinomycosis in the ox, sebaceous cyst of the vulva in a heifer, multiple abscesses of the digestive tract and certain other viscera of the pig, and nephrolithiasis in a cow, in all of which the naked-eye tissue changes closely resembled those of TB.—G. B. Brook.

*Kjeldberg, J. (1941). Husdyrtuberkulosens Bekaempelse i Thisted Amt. En systematisk organiseret kollektiv Bekaempelse. [**Control of Animal TB. in the Thisted District (Denmark)**].—*Maanedsskr. Dyrlaeger.* **53.** 377. [Abst. from abst. in *Skand. VetTidskr.* **32.** 49 and 53–55].

K. gives the results of repeated tuberculin testing in an area in which 85% of the herds and over 40% of the cattle were infected with bovine TB. The method of control followed was not Bang's system, but one which involved the expulsion of the reactors from the herd as soon as practicable. The TB.-free herds formed a sufficient reservoir of replacement stock. Tests were made at yearly intervals, but when two successive tests failed to show reactors, further tests were made every second year. The scheme was linked to a milk-bonus system administered by the local dairies and involving penalties for farmers who did not participate or who failed to dispose of reactors within a month. The meat-inspection veterinarians co-operated by reporting any instances of uterine or congenital TB. in cattle from the area. [In the latter case the dam is slaughtered according to Danish law.] At the start of the scheme in 1934, 897 out of 4,100 farms were free from TB. In 1941 7,400 out of 9,200 farms were free.

TB. detected in the carcasses of swine from the area fell simultaneously from 5·24% to 3·27%. A similar subsidence was noted in the number of human patients treated for non-pulmonary TB. within the area. —G. B. Brook.

I. Wight, A. E. (1942). **Time Has Proved the Efficiency and Value of Bovine Tuberculosis Eradication Work.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 170–173.

II. —. (1942). **Report of Committee on Tuberculosis.** —*Ibid.* pp. 180–181.

I. During the year ending June 30th, 1941, about 12,230,000 tuberculin tests applied to cattle revealed 40,702 reactors (0·3%). This is the lowest degree of infection reported since TB. eradication work was commenced. On November 1st, 1941, 261,600 herds containing 3,912,500 cattle were fully accredited as free from TB. During the year, approximately 10,102,600 cattle, not including reactors, were slaughtered under Federal supervision. Of these only 8,000 (0·07%) showed any evidence of TB. Of 48,700,000 pigs similarly slaughtered 4,000,000 (8·2%) were affected. Only 31,000 of these were condemned as unfit for food. Much of the TB. in swine was of the avian type. Efforts to control the disease in poultry are being continued.

II. A review of the TB. situation shows the necessity for intensive research into nonspecific tuberculin reactions and continued efforts to eradicate TB. from swine, poultry, and wild animals. Proposed changes in the rules for accredited herds of cattle include a recommendation that when infection occurs, the infected herd should be submitted to three tuberculin tests at intervals of not less than 60 days, and to a final test not less than 12 and not more than 14 months after the test which disclosed infection.—D. D. Ogilvie.

Hagan, W. A. (1942). **The No-Visible-Lesion Case Problem in Tuberculosis Eradication.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 174–179.

During the fiscal year 1941, about 41% of cattle reacting to the tuberculin test failed to show lesions of tuberculosis on P.M. examination. In such animals, sensitization was probably due to human or avian tubercle bacilli, saprophytic acid-fast bacilli, or *Mycobacterium johnei*. In order to deal with the problem, it is recommended that reacting animals should be isolated and retested in 60 days. Only those which have reacted twice should be condemned. Subsequently, meat-inspection findings should be checked by laboratory examination and the history of each reacting animal and herd should be fully explored by the operator in the field.—D. D. Ogilvie.

*Schmidt, H. W. (1940). Die Übertragung von Bact. tub. humanum beim Schalenwild. [**Transmission of the Human Type of Tubercle Bacillus by Deer**].—*Münch. med. Wschr.* **87.** 972. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 120].

Of ten strains of *Mycobact. tuberculosis* isolated from deer, one proved to be of the human type.—M. Landau.

*Sollazzo, G. P. D. (1941). Ricerche sulla frequenza del bacillo di tipo bovino nella tubercolosi osteo-articolare e linfoghiandolare dell'uomo. [**Frequency of Bovine Type Infection in Osteo-Arthritic and Lymph Node TB. in Man**].—*Arch. ital. Med. sper.* **8.** 97–100. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **140.** 146].

Bovine type bacilli were found in 7·4% of bone cases and in 23·8% of glandular cases. 208 human cases of TB. were examined.

Chernyshev, V. V. (1941). Otlichitel'nye svoĭstva variantov tuberkuleznykh kul'tur bych'ego tipa. [**Characteristics of S and R Variants of Bovine Type Tubercle Bacilli**].—*Veterinariya, Moscow.* No. 1. pp. 69–76. [French summary].

S and R variants and intermediate types were obtained by the dissociation of virulent bovine tubercle bacilli. S and R variants differed not only in their morphological and cultural characteristics but also in virulence and antigenic and tuberculinogenic properties. R variants were found to be more resistant to temperature and to stains such as malachite green and gentian violet, but less virulent for rabbits and g. pigs than S strains. Antigen obtained from R variants proved to be more sensitive than that from S variants. The serum of g. pigs inoculated with R variants was less active in the complement-fixation test than serum prepared from S variants, and tuberculin obtained from S variants was more active in g. pigs than that from R variants and than the standard tuberculin.—A. M.

*Diehl, K., & Fischer, E. (1940). Experimente über die Tuberkulose bei Kaninchen. [**Research on TB. in Rabbits**].—*Erbarzt.* **8.** 93–99. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 120].

Over 600 rabbits were given intravenous injections of bovine type tubercle bacilli. Some of the animals died of severe pulmonary TB. whilst others showed a greater resistance and succumbed only to a secondary

involvement of extrapulmonary organs. By systematic inbreeding within these two groups the authors obtained two almost pure strains of rabbits which reacted in two different ways to one and the same infective dose of tubercle bacilli.—M. LANDAU.

BERNHEIM, F. (1941). **The Effect of Various Substances on the Oxygen Uptake of the Tubercle Bacillus.**—*J. Bact.* **41.** 387–395.

It was confirmed that glycerol, carbohydrates, and amino and some other acids do not effect O_2 uptake. All the aldehydes tested, the Na salts of the lower fatty acids, some of the lower alcohols, and various other substances increased O_2 uptake. The O_2 uptake is proportional, over certain ranges, to the concentration of the compound added and is dependent, but not proportionally, on the bacterial concentration. The O_2 uptake is always accompanied by CO_2 production. The effective substances are so heterologous in their physical and chemical properties that it is unlikely that they act as catalysts and it is assumed that they are substrates. The auto-oxidizability of all the compounds used was found to be negligible under the conditions of the experiment. —JOHN FRANCIS.

*POPP, P. (1940). Züchtungs- und Infektionsversuche mit Paratuberkelbakterien. **[Culture and Infection Trials with *Mycobacterium johnei*].**—*Inaug. Diss., Leipzig.* pp. 32. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 45].

Mycobact. johnei isolated from a piece of intestine was grown on Rinjard's solid medium containing liver broth, glycerin, extract of *Mycobact. phlei*, and ox serum. For subcultivation both liver agar and Witte's TB. medium proved satisfactory.

Several white mice and two g. pigs were subjected to experimental infection. By intra-abdominal inoculation with a paraffin emulsion of pure culture, only the mice could be infected. Intravenous infection of mice with pure culture was also successful, but attempts to infect them with material from intestinal lesions completely failed.—M. LANDAU.

*HARPOTH, H. (1940). Ueber die serologischen Verhältnisse der säurefesten Saprophyten und ihre Trennung von den Tuberkelbacillen. **[Serological Relationships between Acid-Fast Saprophytes and their Differentiation from Tubercle Bacilli].**—*Z. Tuberk.* **85.** 321–326. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 503].

Agglutination tests were carried out using five strains of unnamed acid-fast saprophytes, one strain of *Mycobacterium phlei*, and five avian, a number of bovine, and two human strains of *Mycobact. tuberculosis*.

Suspensions of *Mycobact. phlei* were agglutinated by sera prepared against each of the other organisms. Of the unnamed saprophytes two strains were agglutinated by some of the bovine and some of the avian TB. antisera whilst one strain was not agglutinated by any of the sera.

By agglutination-absorption tests, the saprophytes could be distinguished from the three types of tubercle bacilli.—M. LANDAU.

GRÓH, E. (1940). Ueber einen chromogenen und pathogenen säurefesten Stamm. **[A Chromogenic and Pathogenic Acid-fast Strain from a Pig].**—*Zbl. Bakt. I. (Orig.).* **146.** 163–165.

From the submaxillary lymph node of a pig an acid-fast bacterium was isolated, which formed yellow colonies on media containing glycerol. In the absence of glycerol, growth was scanty, and no pigment was produced. The organism produced a cloudy growth in liquid media, and would form alkali. It was pathogenic for g. pigs and rabbits, but not for a fowl, with production of tubercles. Animals which died early showed indications of marked toxic action.—J. G. CARR.

SIMONOV, G. F., GRACHEV, N. I., & D'YAKONOV, V. I. (1941). Poluchenie syvorotki protiv rozhi svineĭ ot krupnogo rogatogo skota. **[Production of Swine Erysipelas Antiserum in Cattle].**—*Veterinariya, Moscow.* No. 3. pp. 80–83. [French summary].

Oxen have been used as serum producers by the Krasnodar serum institute instead of horses, as use of the latter involves their yearly examination for equine infectious anaemia. The therapeutic and preventive properties of ox sera were shown in field use to be as high as those of horse sera. Intraperitoneal inoculation for hyperimmunization of bovines was well tolerated and was found more suitable than the subcutaneous route. The dosage of antigen used and the preparation of the serum was the same as in horses.—A. MOLDAWSKY.

KYAW, M. H. (1942). **Some Notes on the Present Position of Pasteurellosis in Great Britain.**—*Vet. J.* **98.** 3–13.

A brief review is given of the literature on pasteurellosis of poultry, cattle, and swine in Great Britain since 1924. K. states that the poultry disease is probably the only true pasteurellosis in this country and of economic significance, most outbreaks being connected in some way with imported poultry [or migratory wild birds]. K. attempts to form an opinion as to whether true haemorrhagic septicaemia of cattle exists in Great Britain and compares some of the outbreaks described as the pectoral form of the disease with those of the classic type known in tropical countries. The chief difference is the non-pathogenicity for laboratory animals of the bipolar-staining organisms concerned with the former type. K. therefore suggests the designation *Pseudopasteurella pneumoniae* n. sp. for the organism concerned which is similar to organisms isolated from rabbits and sheep by other workers and also from cattle by American workers.

A few outbreaks of what appear to have been more typical outbreaks of bovine pasteurellosis are also described, and the comparative pathogenicity tests are tabulated. Differences between transit fever and pasteurellosis are also discussed.—C. V. WATKINS.

*NOVIKOVA, E. J., & LALASAROV, G. A. (1940). **[The Role of Amphibia in the Epizoology of Tularaemia].**—*Rev. Microbiol., Saratov.* **19.** 271–294. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **140.** 187].

Frogs and toads are susceptible to tularaemia, the infection being chronic or latent. The organism cannot again be isolated in its original form, but only as an attenuated strain which forms brown or clear colonies on ordinary media. This strain is, however, still immunologically connected with *Bacterium tularense* and gives rise to antibodies against the latter when inoculated into warm-blooded animals.

GRAHAM, R., HESTER, H. R., & LEVINE, N. D. (1941). **Listeria (Listerella) Infections in Domestic Animals.**—*Proc. 58th ann. Meet. Ohio St. vet. med. Ass., 1941.* pp. 88–93.

A historical account is given of reported *Listerella* infections in domestic animals and man since the first recognition of the disease as a specific septicaemia in small laboratory animals. Outbreaks in sheep, cattle, and poultry in Illinois, diagnosed by isolation of the organism, are described in brief. There follows a summary of bacteriological characters of the causative bacillus and the clinical symptoms, pathology, course, diagnosis, and preventive and therapeutic treatment of the disease in domestic and laboratory animals. A valuable bibliography is appended.—R. O. MUIR.

JULIANELLE, L. A. (1940). **The Function of Listerella in Infection.**—*Ann. intern. Med.* **14.** 608–620.

A bacteriological study of 22 *Listerella* strains from rodents, ruminants, a carnivore, and man showed conjunctival instillation of broth culture in the rabbit to be a diagnostic test of value, producing a specific intense conjunctivitis with corneal infiltration and vascularization. The 22 strains fell into two serological types by agglutination, agglutinin-absorption, and polysaccharide-precipitation tests. Spontaneous listerella infection in rodents, ruminants, carnivores, fowls, and man is briefly discussed with a description of clinical and pathological features. Cultural and serological investigations of the relation of listerella to human infectious mononucleosis, experimental infection of rodents, and tests for heterophile antibody yielded indecisive results. —R. O. MUIR.

KOSHELEV, V. I. (1939). Izuchenie etiologii pnevmonii ovets i yagnyat v Krymskoĭ ASSR. **[Study of the Aetiology of Pneumonia in Sheep and Lambs in the Crimea].**—*Sovyet. Vet.* No. 12. pp. 37–39.

This disease differs from a septic purulent pleuropneumonia of lambs and sheep observed in North Caucasus. In the Crimea, the incidence is highest in July to August, while the disease is rare during the winter months. It usually occurs on farms with unsatisfactory hygienic conditions. The clinical and P.M. findings and the aetiology of the disease are discussed. Various bacteria, such as *Bacterium coli*, *Salmonella paratyphi*, *Pseudomonas pyocyanea* and various cocci were isolated from the carcasses of 77 lambs and five sheep ; K. considered these bacteria to be secondary invaders. Experimental transmission in laboratory animals and lambs failed. Specific treatment with various sera was of little value. A decrease in the incidence of the disease was observed after the improvement of hygienic conditions, especially during and after the lambing season.—A. MOLDAWSKY.

VERGE, J., & MONOURY, G. (1942). Recherches bactériologiques sur la spondylite porcine. **[Bacteriological Research on Porcine Spondylitis].**—*C. R. Soc. Biol. Paris.* **136.** 38–39.

In 25 cases examined bacteriologically, TB. was found 14 times and pyogenic organisms six times. *Brucella abortus* was not found in a single case.—J. G. C.

*LUKIĆ, M. (1940). **[Salmonella Group Bacteria in Healthy Swine].**—*Vet. Arhiv.* **10.** 551–565. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 374].

Some of the internal organs (tonsils, liver, spleen, gall bladder, and mesenteric and deep inguinal lymph nodes) of 50 pigs, the contents of the small intestines of 100 pigs, and the contents of the large intestines of 302 pigs were examined for the presence of salmonella. The animals were all healthy prior to slaughter and they were of various ages and breeds. In no instance could members of the salmonella group be found. From the intestinal contents of some pigs four strains of para-coli bacilli were isolated, some of which resembled salmonella organisms whilst the rest were allied to the *Bacterium coli* group.—M. LANDAU.

*CARPANO, M. (1940). La tifosi dei gallinacei in Albania. **[Fowl Typhoid in Albania].**—*Azione vet.* **9.** 519–522. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 392].

Fowl typhoid is very common amongst adult poultry in Albania. Up to the present it has not been observed in young chicks. The acute form of the disease is the one most frequently encountered.—M. L.

WINAND, H. (1941). Zur Paratyphose der Taube. Zugleich ein Beitrag zur epizootologischen Bedeutung des ammonschwachen Breslaubacteriums. **[Pigeon Paratyphoid and the Epizoological Importance of Ammonia-Weak** *Salmonella typhi-murium***].**—*Arch. wiss. prakt. Tierheilk.* **76.** 378–386.

Salmonella typhi-murium was isolated P.M. from a cow affected with metritis. The organism was ammonia weak and the antigenic structure was IV : i : 1, 2 ; the factor V was not present. Consequently, pigeons were suspected as the source of the infection. Repeated examination of the faeces of the other cattle on the farm was negative. The faeces of a flock of pigeons were found to contain a salmonella identical with the one isolated from the cow. Six of the pigeons were captured ; all were positive to the agglutination test, and the organism was present in the faeces of one of them. Later, the organism was isolated from three of the birds. Cultures in the Hottinger range were typical for *S. typhi-murium*, being positive in dextrose, mannite, rhamnose, arabinose, and dulcite. There was no growth in ammonia media after 24 hours and slight growth after four days on dextrose, mannite, dulcite, and sodium citrate. P.M. findings, described in detail, were typical of pigeon paratyphoid.

Attempts to infect pigeons with the normal type of *S. typhi-murium* and with the ammonia-weak strain indicated an affinity for pigeons of the ammonia-weak strain, but the identity was not definitely settled.—T. B.

STROGOV, A. K. (1941). Vliyanie razlichnykh istochnikov uglerodnogo pitaniya i agar-agara na nekotorye svoĭstva mikrobov gruppy Salmonella. **[Effect of Carbon and Agar on the Properties of the Salmonella Group** (*S. suipestifer*)**].**—*Veterinariya, Moscow.* No. 3. pp. 75–79. [French summary].

The type of carbon compounds present in a semi-liquid synthetic medium affects the agglutinogenic properties of *S. suipestifer* ; they are reduced by the addition of carbon compounds such as mannite and increased by polysaccharides and disaccharides. These properties are also increased four times when 0·1% agar is added to the medium. The viability and the biochemical properties of bacteria of the *coli* and *Salmonella* groups were retained for considerably longer periods when grown on synthetic media containing carbohydrates such as dextrin and maltose as the only source of carbon, than when glucose, mannite, and dulcite were the sources of carbon.—A. MOLDAWSKY.

BOIVIN, A., & LEHOULT, Y. (1942). Le facteur antigénique accessoire XII et son rôle dans la spécificité et dans le pouvoir vaccinant des *Salmonella*. **[Role of Antigenic Accessory Factor XII in the Specificity and Vaccinating Power of Salmonella].**—*C. R. Soc. Biol. Paris.* **136.** 48–51.

The amount of antigen XII was found to vary in different strains of salmonella. Immunization of mice by a strain of *S. typhi* containing no XII gave no protection to subsequent inoculation of *S. typhi-murium*, which always contains quantities of XII. A strain of *S. typhi* rich in XII did confer some protection to subsequent treatment with *S. typhi-murium*.—J. G. CARR.

*HOLMBERG, J. (1941). **[Control of Bovine Brucellosis in Estonia].**—*Suom. Eläinlääkäril.* **47.** 23–32. [German summary]. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 512].

Before the present war, an attempt was made in Estonia to eradicate bovine contagious abortion by the test and slaughter method. The costs of veterinary services and of compensation for compulsorily slaughtered animals were paid out of funds derived from special taxes placed on the slaughtering of food animals and on ham, sausages, and fats.

Only 200 farms in the country were found to be infected. The disease was eradicated from two-thirds of the infected farms.—M. LANDAU.

BIRCH, R. R. (1942). **Calf Vaccination against Bang's Disease—The Essentials of a Good Plan for New York.**—*Cornell Vet.* **32.** 113–118.

B. tabulates present knowledge of strain 19 and enumerates the points on which complete information is lacking. These facts indicate that only selected herds should be vaccinated and that the vaccine should not be used indiscriminately. The objective should be to obtain an increasing number of clean herds. Vaccination can give its full measure of benefits only when accompanied by systematic blood testing, and, if widely used otherwise, it may in the long run be a hindrance rather than a help. State supervision is advised with limited compensation according to the conditions in the herd. The expense need not be excessive, and the vaccination of all calves in an area is unnecessary.—S. J. GILBERT.

GOLUBEV, I. E. (1939). Vospriimchivost' loshadeĭ k razlichnym tipam Brucella. **[Susceptibility of Horses to the Different Types of Brucella].**—*Sovyet. Vet.* No. 2. pp. 23–24.

Experiments on nine horses showed that they were equally susceptible to all three types. The period of incubation largely depends on the method of infection. Following application to the conjunctiva and oral mucosa, agglutinins appeared on the seventh and 13th days respectively; following intracutaneous and subcutaneous inoculation, agglutinins appeared at the 3rd and 4th days respectively. In G.'s opinion, a reaction of 1 : 50 should be regarded as doubtful and of 1 : 100 as positive. After 15–19 days, the aggln. titres of affected horses rise to 1 : 800–1 : 3,200. It was found to be impossible to produce fistulous withers by experimental infection. The reaction of horses to intracutaneous and subcutaneous injection of infective material is described. On P.M. examination no changes in the organs could be observed; brucella were found in the lymph nodes (most frequently), bone marrow, liver, spleen, kidneys, bladder, uterus, ovaries, amniotic fluid, and in the foetal organs.—A. M.

SINGEWALD, M. L. (1941). **Brucellosis with Positive Blood Cultures and Negative Allergic Skin Tests. Report of Two Cases.**—*N. Y. St. J. Med.* **41.** 1766–1767.

Two cases are reported of brucellosis in children who had consumed raw milk over a long period. Both gave positive agglutination reactions, and blood cultures for *Brucella abortus* were positive. Skin tests with Huddleson's brucellergen showed erythematous reactions at 24 hours with negative readings at 48 hours.

TASHMUKHAMETOV, U. (1941). Polisakharidno-lipoidnyĭ kompleks brutsell. Soobshchenie 1. Toksicheskie i pretsipitinogennye svoĭstva. **[Lipoid-Polysaccharide Complex of the Brucella Group. I].**—*Veterinariya, Moscow.* No. 3. pp. 3–10. [French summary].

T. studied the physical, toxic, and precipitinogenic properties of a protein-free, lipoid polysaccharide complex extracted from *Br. abortus*, *Br. suis*, and *Br. melitensis* by trichloracetic acid. This product was used for the precipitation test for bovine, equine, and ovine sera. The results agreed with those obtained by the agglutination test and confirmed reactions which had been doubtful by the aggln. test. T. stresses the simplicity of this method.—A. MOLDAWSKY.

QUORTRUP, E. R., & HOLT, A. L. (1941). **Detection of Potential Botulinus-Toxin-Producing Areas in Western Duck Marshes with Suggestions for Control.**—*J. Bact.* **41.** 363–372.

Western duck-sickness is known to be due to *Clostridium botulinum* Type C toxin. Heretofore animal matter has been thought to be the primary factor in botulinus toxin production, but the present writers have shown that anaerobic conditions, suitable for toxin formation, are produced in decaying vegetable matter, killed either by evaporation in the case of aquatic plants, or by flooding in the case of upland vegetation. The factors involved in producing optimum conditions are highly complex and few of the reasons for the seasonal outbreaks of botulism amongst ducks are understood. Potential toxin-producing areas can, however, be detected by the use of oxygen and pH tests.

Raking and aerating predetermined areas have proved successful in reducing the incidence of disease in the duck marshes. It has also been shown that aerobic bacteria destroy preformed botulinus toxin; it is therefore unlikely that it would persist under natural conditions for any length of time; even its development depends on the balance between productive and destructive factors.—JOHN FRANCIS.

HEILMAN, F. R. (1941). **A Study of Asterococcus muris (Streptobacillus moniliformis). I. Morphologic Aspects and Nomenclature. II. Cultivation and Biochemical Activities.**—*J. infect. Dis.* **69.** 32–44 and 45–51.

I. Twelve strains of *S. moniliformis* were used in this study. Ten were isolated from the middle ear of rats exhibiting symptoms of "turning disease", one was isolated from a human being suffering from rat-bite fever, while the twelfth strain was received from another laboratory. Seven strains of the L1 "pleuro-pneumonia-like" organisms were derived from these strains. It is considered that these latter forms are a degraded avirulent form of *S. moniliformis* which have temporarily or permanently lost the property to form filaments.

In addition to being pathogenic for rats and human beings, *S. moniliformis* or a similar organism is known to produce a disease of calves and an epizootic in mice. The peculiar reproductive, pleomorphic, and staining characters of *S. moniliformis* and its ability to pass through coarse candles, seems to set it apart from other bacteria and to place it in the distinctive group which includes pleuro-pneumonia organisms and the agent of agalactia of goats.

II. The L1 organism can be obtained in pure culture, but *S. moniliformis* always contains a few L1 organisms. Bearing this in mind, H. states that both *S. moniliformis* and the L1 organisms have identical fermentation reactions, but that the former is more vigorous. Both have similar growth requirements. *S. moniliformis* could be propagated in and was pathogenic for the developing chick embryo, whereas the L1 organism survived in, but did not penetrate, the embryo. H. considers that these observations support the theory that the L1 organism is a degraded form of *S. moniliformis*.—J. S. PATERSON.

ZARUBKINSKIĬ, V. S. (1940). Materialy po izucheniyu bolezni loshadeĭ, izvestnoĭ pod narodnym nazvaniem "suĭlyuk". **[Study of a Disease in Horses Known as *Suilyuk*].**—*Sovyet. Vet.* No. 6. pp. 50–52.

This is a progressive mycotic broncho-pneumonia which tends to recur on certain farms in various districts of the Middle Asiatic Republics of the U.S.S.R. and causes considerable losses. The disease is attributed to a not clearly identified fungus of the genus *Actinomyces*. The highest incidence is observed from February to April, at which season mouldy hay is liable to be given to horses. Attempts to cure infected animals with drugs have not been successful. Prevention depends upon the proper conservation of hay.—A. MOLDAWSKY.

BEEUWKES, H., & COLLIER, W. A. (1942). **Studies on Arthrotropic Pleuropneumonia Like Microorganisms.**—*J. infect. Dis.* **70.** 1–6.

This is a study of two strains of a "pleuropneumonia-like" organism, one isolated from a case of spontaneous polyarthritis in a rat, and the other from rats inoculated with material from a patient with acute rheumatic fever. They were found to be identical in their morphology, biochemical characters, filtrability, resistance, and pathogenicity for rats.—I. W. BURTON.

DISEASES CAUSED BY PROTOZOAN PARASITES

VANDERPLANK, F. L. (1942). **A Note on Trypanosomiasis of Game from Tsetse Areas at Shinyanga and Ukerewe Peninsula.**—*Trans. R. Soc. trop. Med. Hyg.* **35.** 319–322.

An attempt was made to carry out a systematic examination for trypanosomes in the blood of wild game shot in the Shinyanga area of Tanganyika. A total of 135 animals belonging to 21 different game species was examined by the use of thick and thin smears made from the jugular vein immediately after shooting. The trypanosomes found were classified by their morphology as *T. brucei*, *T. congolense*, or *T. vivax*. *T. brucei* was found in only one animal, a wart-hog. *T. congolense* was found in various species of wild ruminants, the heaviest incidence of infection occurring in the giraffe (47·6%) and impala (20%). *T. vivax* was detected only in the giraffe, kudu, and hartebeest.

It appeared that trypanosomes are more common in the blood of young animals than of adults, and a higher percentage of infection was found during the rains than in the dry season.—U. F. RICHARDSON.

SEARLE, D. S., & REINER, L. (1941). **The Rôle of Carbon Dioxide in the Glucose Metabolism of Trypanosoma lewisi.**—*J. biol. Chem.* **141.** 563–572.

Experiments undertaken to ascertain the mechanism of CO_2 assimilation by *T. lewisi* showed that this substance activates glucose disassimilation both in anaerobic and aerobic conditions. In anaerobic glucose disassimilation, succinic, lactic, pyruvic, and acetic acids are formed and CO_2 is used. The amount of assimilated CO_2 is equivalent to the amount of succinic acid formed. Under aerobic conditions, about as much acetic acid is formed as succinic acid under anaerobic conditions. In addition, small amounts of succinic, lactic, and pyruvic acids were found. Under aerobic conditions CO_2 is produced instead of being used. Glycerol is disassimilated under aerobic conditions only, the products of metabolism being CO_2 and water.

It is suggested that CO_2 utilization under anaerobic conditions and CO_2 activation of metabolism under aerobic conditions involve the formation of glucose carbonate and glycerol carbonate.—U. F. RICHARDSON.

*ROETTI, C. (1940). Sull'esistenza di un Tripanosoma del tipo Theileri nei dromedari somali. [*T. theileri* **in Somali Camels**].—*Ann. Pat. trop. Parassit.* **1.** 295–297. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 520].

A description of a trypanosome of camels in Italian Somaliland. The organism appeared to be related to *T. theileri* and was classified by R. in a group with *T. melophagium*.—M. LANDAU.

DUCKWORTH, C. U. (1942). **Dourine and a Few Question Marks.**—*Lederle vet. Bull.* **11.** 15–17.

In 1941 a blood sample from a stallion from California gave a positive complement-fixation test for dourine, and enquiry revealed that the stallion had served a mare imported from Mexico. All the horses in the county were tested and 15 out of 8,259 animals gave positive reactions. In carrying out the tests, identification of animals was effected by the use of pasteboard tags clipped into the mane, as it was appreciated that any marks placed on the animals could be copied by persons endeavouring to evade the test or its implication, whereas the handwriting on the tag could not be easily copied. For preservation of serum, merthiolate (sodium ethyl mercuric thiosalicylate) was found to be better than phenol.

Of the 15 reactors, three were geldings; it is pointed out that, out of 672 reactors in Arizona, 231 were geldings, and also that in the latter state yearling and two-year-old mares kept with no stallion and with no possibility of service were found to be affected. It is emphasized that this finding necessitates the testing of all susceptible animals in areas where dourine is known to exist, and that the possibility of some unrecognized vector must be considered.—U. F. R.

MAZZA, S. (1940). Investigaciones sobre enfermedad de Chagas. I. Enfermedad de Chagas en las provincias Salta y Jujuy. [**Investigations on Chagas' Disease. I. In the Provinces of Salta and Jujuy**].—*Publ. Mision Estud. Pat. reg. argent.* No. 45. pp. 3–34.

MAZZA, S., & LOVAGLIO, J. (1940). Investigaciones sobre enfermedad de Chagas. II. Infestación de triatomídeos e infección de mamíferos y seres humanos por *S. cruzi* en los departamentos Cafayate y San Carlos (Salta). [**Investigations on Chagas' Disease. II. Incidence of** *Trypanosoma cruzi* **Infection in Human Beings, Animals, and** *Triatoma* **in Cafayate and San Carlos (Salta Province)**].—*Ibid.* pp. 35–40.

MAZZA, S., & CORNEJO, A. (1940). Investigaciones sobre enfermedad de Chagas. VI. Infestación de triatomídeos domiciliarios por *S. cruzi* (Chagas, 1909) en departamentos Molinos, Cachi y La Pola (Salta). [**Investigations on Chagas' Disease. VI.** *T. cruzi* **Infection of** *Triatoma* **in Dwellings and Animal Houses in Molinos, Cachi, and La Pola (Salta Province)**].—*Ibid.* pp. 97–105.

MAZZA, S. (1940). Investigaciones sobre enfermedad de Chagas. IX. Otros mamíferos infectados naturalmente por *Schizotrypanum cruzi*, o *cruzi* similes en provincias de Jujuy y Salta. [**Investigations on Chagas' Disease. IX. Infection of Animals with** *T. cruzi* **or Similar Trypanosomes in Jujuy and Salta**].—*Ibid.* pp. 119–134.

I. M. found dogs, cats, bats, and armadillos to be infected with *T. cruzi*.

II. In the department of Cafayate, the authors found considerable infestation of houses by *Triatoma infestans*. A large percentage of the parasites carried *T. cruzi* and a number of domestic animals was found to be infected.

In the department of San Carlos, 3 armadillos, 8 dogs, 2 cats, 1 bat, and 2 human beings were found to be infected by *T. cruzi*, and again a large part of the *Triatoma* in the dwellings were found to be carriers of the trypanosome.

VI. In the very primitive dwellings at Molinos, Cachi, and La Pola, the authors found great numbers of *Triatoma*. A large proportion of the parasites acted as carriers of *T. cruzi*. Domestic cats living in the houses were found to be affected with natural trypanosome infection.

IX. M. reports the occurrence of natural infection by *T. cruzi* in the following animals, in the province of Jujuy:—*Tayra barbara* (a Mustelid), *Pseudolopex culpeus andinus* (a wild canine), and *Leptosciurus argentinus* (a squirrel).

In the province of Salta, animals affected included edentates, bats, and the opossum, *Didelphys paraguayensis*.—MILLER WATSON.

DIAS, E. (1940). Serviço de estudos das grandes endemias. Transmissão do " Schizotrypanum cruzi " entre vertebrados, por via digestiva. **[Transmission of *T. cruzi* among Vertebrates by the Alimentary Tract].**—*Brasil.-med.* **54.** 775.

D. suggests that dogs and cats become infected after the ingestion of affected rodents or other small wild animals, and that they then transmit the infection to *barbeiros* [? reduviid bugs] in dwelling houses, and through them to man.

*CARPANO, M. (1940). Su di un nuovo Monadidae pluriflagellato osservato nell'essudato vaginale delle cavalle : Polyflagellomonas genitalis n. g. n. sp. **[New Polyflagellate, *Polyflagellomonas genitalis*, n. g., n. sp., from the Vagina of the Mare].**—*Riv. Parassit.* **4.** 133–140. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 304].

C. reported the finding of a new flagellate organism in the vaginal exudates of two mares suspected of being affected with dourine. This protozoan was described as having a lenticular or globular body, a large nucleus, and a fringe of over 100 flagella. Atypical forms possessed fewer flagella, whilst monoflagellar variants were also found. C. considers the organism to be closely allied to the genera *Callimastix* and *Selenomonas*.—M. L.

BOUGHTON, D. C. (1942). **An Overlooked Macroscopic Intestinal Lesion of Value in Diagnosing Bovine Coccidiosis.**—*N. Amer. Vet.* **23.** 173–175.

The lesions associated with bovine coccidiosis which are usually described are those found in the rectum and colon. B. now describes a characteristic lesion in the small intestine. By artificial inoculation he produced fatal cases of coccidiosis in calves and found P.M. that the mucosa of the posterior half of the small intestine was frequently covered with small white bodies which previous workers have considered to be due to other genera of coccidia, *e.g. Globidium*. B. believes that these forms are large schizonts of one or more species of bovine coccidia and supports this view by the observation that they appear in greatest numbers towards the end of the prepatent period in experimental coccidial infections.—C. HORTON SMITH.

BECKER, E. R. (1940). **Nature of Eimeria nieschulzi-Growth-Promoting Potency of Feeding Stuffs. I. Positive Effect of Gray Shorts.**—*Iowa St. Coll. J. Sci.* **14.** 317–321. [For part II, see *V. B.* **12.** 206].

Three experiments were designed to test the effect of various rations containing wheat flour, middlings, and soybean oil meal on the life cycle of *E. nieschulzi* in rats. Basal rations were supplemented with the soybean oil meal or middlings of comparable protein content. The presence of soybean oil meal did not inhibit development of the parasites whereas the presence of the wheat product favoured the better development of the final stages of the parasites. Ether, 96% alcohol, petroleum ether, and water were then used as solvents in preparing extracts of the middlings. The extracts were reduced in volume under reduced pressure and dried on to a sugar, salts, casein and oil meal mixture at a temperature of 55°C., and fed as a supplement to the basal ration ; the amount of extract given was equivalent to 30 g. of middlings for each 100 g. of ration. The ether, alcohol, and petroleum ether extracts showed no growth-promoting effect on the parasite, but autoclaved mixtures of middlings and water yielded an extract which possessed growth-promoting factors. Assessment of the effect of diets was obtained by oocyst counts (obtained by dilution methods), which B. regards as reliable criteria for determining the extent of infections. —C. HORTON SMITH.

BELTRAN, E., & LARENAS, R. (1941). Producción de malaria aviar con *Plasmodium gallinaceum* por vía oral. **[Production of Avian Malaria with *P. gallinaceum* by the Oral Route].**—*Rev. Inst. Salubr. Enferm. trop.* **2.** 87–94. [English summary]. [Abst. in *Trop. Dis. Bull.* **39.** 399, copied *verbatim*. Signed : C. M. W.]

The authors have confirmed the observation of SHORTT and MENON [*Trop. Dis. Bull.* (1941). **38.** 338.] that chickens may be infected with *Plasmodium gallinaceum* by the introduction of infected blood into the mouth. In the present instance the authors introduced into the mouths of 34 two-weeks-old chicks infected citrated blood, care being taken to avoid any damage to the buccal mucosa. In four of the chicks infection resulted.

VERSIANI, V., & GOMES, B. F. (1941). Sobre um novo hematozoário da galinha—" Plasmodium juxtanucleare " n. sp. (Nota prévia). **[A New Haematozoon of the Fowl, *P. juxtanucleare* n. sp.].**—*Rev. brasil. Biol.* **1.** 231–233. [English summary]. [Abst. in *Trop. Dis. Bull.* **39.** 400, copied *verbatim*. Signed : C. M. W.]

The authors announce their discovery in two domestic fowls in the State of Minas Geraes, Brazil, of a small malarial parasite resembling *P. vaughani*, *P. rouxi* and *P. nucleophilum*. The parasite has a tendency to be in contact with the nucleus of the host cell and is accordingly given the name *P. juxtanucleare*. It is readily inoculable to chickens, while one of two turkeys inoculated became infected. A number of other birds, including pigeons and canaries, appear to be refractory.

A fuller description of the parasite is promised in a further paper.

*YAKIMOV, V. L., GUSEV, V. F., PELEVIN, V. K., & MONECHTKOVA, M. F. (1940). **[Are the Algerian and Russian *Theileria dispar* Identical or Not ?].**—*Rev. Microbiol., Saratov.* **19.** 332–351. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*) **140.** 221].

The authors carried out tests on more than 30 cattle to find out whether the Russian *T. annulata* is identical with the Algerian *T. dispar*. They could not decide the question. The Algerian strain was of much lower virulence than the Russian and infection with it did not protect against subsequent infection with the Russian strain.

SUDACHENKOV, V. V., & CHIZH, A. N. (1941). O vidovoĭ samostoyatel'nosti Françaiella caucasica (Yakimoff et Belavine, 1926). **[Position of the Piroplasm *Françaiella caucasica*, Yakimov & Belavin, 1926].**—*Veterinariya, Moscow.* No. 3. pp. 103–105. [French summary].

After reviewing the relevant literature on *F. caucasica* and *Babesiella ovis*, the authors conclude that, as the conditions caused by these organisms can be cured by the same drugs (albargin and flavacridine), and as there are hardly any morphological or biological differences between *Françaiella* and *Babesiella*, *Françaiella* should not be regarded as a separate genus but as a subspecies or variety of *Babesiella*.—E. R. PARISER.

GALLO, P., & VOGELSANG, E. G. (1940). La anaplasmosis en Venezuela. Presencia de la Babesia bovis, Grahamia y Eperythrozoon (?) en bovinos. **[Anaplasmosis in Venezuela : Occurrence of *B. bovis*, *Grahamella*, and *Eperythrozoon* (?)].**—*Rev. Med. vet. Parasit., Caracas.* **2.** Nos. 3/4. 3–21.

The authors studied anaplasmosis in Venezuela and describe different clinical forms. They found simultaneous infection with *B. bovis* for the first time in Venezuela. In some bovine animals they found, in the red blood corpuscles, bodies with the characteristics of *Grahamella* and of *Eperythrozoon*, but when this blood was used for artificial inoculation only anaplasms appeared in the infected animal. Cultivation of anaplasms was undertaken in a modification of Gaillard's medium. Best results were obtained by immediate culture of blood taken from hyperacute cases. Division of the anaplasms was observed to take place inside or outside the blood corpuscles, by simple binary fission, with formation of occasional tetrads. It is claimed that cattle could be infected by inoculation with material subcultured every 24 hours, but that 48-hour cultures were no longer infective.

Trypaflavine and neosalvarsan are stated to have given good results in treatment; immunization and autohaemotherapy are referred to.—Miller Watson.

Mikhin, N. A., Azhinov, & Salikov. (1941). Izuchenie morfologicheskikh, kul'tural'nykh i virulentnykh svoĭstv Spirochaetae ictero-haemoglobinuriae vitulorum. **[Morphological and Cultural Characters and Virulence of *Leptospira icterohaemoglobinuriae vitulorum*].**—*Veterinariya, Moscow.* No. 1. pp. 51–55. [French summary].

The vector of infectious jaundice in cattle and calves is a spirochaete which probably occupies an intermediate position between *Borrelia recurrentis* and *Leptospira icterohaemorrhagiae*. Various forms were encountered in cultures and the existence of developmental stages is inferred. Fresh, seven-day-old cultures were virulent for young white mice and g. pigs when inoculated intraperitoneally or intrathoracically. Intravenous injection into calves did not always produce infection. The best growth was obtained in Kitt-Tarozzi and semi-liquid liver-agar medium. In sealed tubes containing Kitt-Tarozzi medium the organisms remained viable for 22 months.—A. Moldawsky.

Wagener, K. (1942). Uebertragung der ansteckenden Gelbsucht (Weilsche Krankheit, Ikterogenes-Leptospirose) vom Schwein auf den Menschen. **[Transmission of Leptospiral Jaundice from the Pig to Man].**—*Tierärztl. Rdsch.* **48.** 121–124.

Investigations are recorded into cases of human leptospiral jaundice occurring in an abattoir in which it is shown that every conceivable measure for the control of rats had been adopted.

The human infections occurred only in men who had been employed in cutting up the carcasses of pigs slaughtered in emergency or on account of disease, the other workers in the abattoir remaining healthy. Six cases of jaundice in slaughtered pigs had been recorded just before the occurrence of the human cases, and it is suggested that more cases in pigs may have escaped record owing to an outbreak of swine fever. It is suggested that the handling of the carcasses of infected pigs was the cause of the human cases, and that such jaundiced pig carcasses should be examined for leptospira.—U. F. Richardson.

Starbuck, E. B., & Ward, T. G. (1942). **Comparison of a Recently Developed Macroscopic Agglutination Test for the Diagnosis of Leptospiral Jaundice with the Standard Microscopic Test.**—*J. infect. Dis.* **70.** 88–91.

The authors describe a method for the diagnosis of leptospiral jaundice by means of a modified rapid slide technique. The antigen consists of formolized culture of *L. icterohaemorrhagiae*, concentrated by high speed centrifugation, and coloured with a small amount of gentian violet, to facilitate reading of the test. The macroscopic test was found to be highly specific, and although not quite as sensitive as the microscopic technique, it appeared to be sufficiently sensitive to be of diagnostic value.—Isobel W. Burton.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

*I. Bödecker, W. (1939). Ueber die klinischen Veränderungen an den Klauen bei der Maul- und Klauenseuche. **[Changes in the Claws of Cattle in Foot and Mouth Disease].**—*Inaug. Diss., Hanover.*

*II. Orendt, V. (1939). Kasuistischer Beitrag über die Erkrankung der Zehen und des Hornschuhes bei Rindern nach überstandener Aphthenseuche. **[Case Records of Disease of the Toes and Hooves of Cattle which have Passed Through Foot and Mouth Disease].**—*Inaug. Diss., Hanover.*

[Absts. from absts. in *Berl. Münch. tierärztl. Wschr.* May 16th. 244. (1941)].

I. B. describes the foot lesions in F. & M. disease. Aphthae form under the hoof as under the epithelium of the mouth. In his experience they usually occurred on the sole and might burst out at the coronet. Loss of the hoof rarely occurred at the acute stage. During that stage new hoof-horn formation ceases, so that recovered animals have ultimately a groove round their hooves, which may result in casting of the hoof: B. states that in the cases which he observed this occurred in one-half of all affected cattle. Cattle very lame from foot lesions are best quickly slaughtered before they lose flesh. [This refers to conditions in Germany where the meat of infected animals is commonly salvaged.]

To prevent the formation of disabling foot lesions, cattle should be kept on dry ground and bedding, so as to effect hardening of the hooves.

II. A description of 158 cases of foot lesions; these are stated to be more common on the hind feet. They can be prevented from becoming serious (as by secondary infections) by good care and bandaging, details of which are discussed.—J. E.

Ratner, L. S. (1941). Aktivnaya immunizatsiya skota protiv yashchura hidrookis'-alyuminievoĭ vaktsinoĭ. **[Active Immunization against Foot and Mouth Disease by Aluminium Hydroxide Adsorbed Virus].**—*Veterinariya, Moscow.* No. 1. pp. 5–11. [French summary].

Aluminium hydroxide vaccines, prepared from local strains similar to those used in Denmark and Germany, were tested on g. pigs and cattle and found to be harmless, avirulent, and to possess well defined immunogenic properties. Large-scale field experiments were first carried out on 21 farms threatened with the disease. 1,772 animals were inoculated with single doses (15–40 ml.) of vaccine prepared by the All-Union Institute for Veterinary Research. Later, 4,069 animals were inoculated with vaccines prepared by a regional veterinary laboratory; single doses of 10–20 ml. given subcutaneously, or two intradermal injections of 0·3–0·5 ml., followed five days later by 3–5 ml. given subcutaneously were used. Only eight animals of all those inoculated contracted the disease. The need for a universal polyvalent vaccine is referred to.—A. M.

KINDYAKOV, V. I. (1940). Izuchenie ustoĭchivosti yashchurnogo virusa vo vneshneĭ srede. **[Investigation on Viability of Foot and Mouth Disease Virus Outside the Body].**—*Sovyet. Vet.* No. 10. pp. 20–22.

Large-scale investigations were conducted in Kazakhstan province by the Kazakhstan F. & M. disease research station, on the viability of different strains of virus on the pastures and in hay ricks. It was found that, when exposed upon plants and on soil, the virus (24-hour-old vesicles from g. pigs) survived 1–15 days during the summer period when the average monthly temperature was 16°–24°C., whereas in autumn and winter, when the average temperature was low, the virus retained its activity up to 165 days. In hay ricks during June, July, and August it withstood destruction for about a month, and in winter for 185–200 days. K. suggests that more virulent strains retain their infectivity longer.

In K.'s opinion, epizootics of F.M. disease are closely connected with the viability of the virus outside the body. Studying the statistics for Kazakhstan, he found that most outbreaks originated at the time when the most favourable conditions existed for survival of the virus outside the body.

K. concludes that the present regulation prescribing three months' quarantine for infected pastures and hay should be reduced in summer and lengthened in winter outbreaks.—A. MOLDAWSKY.

FRENCH, M. H. (1942). **Blood Protein Changes Resulting from the Intravenous Method of Hyperimmunisation against Rinderpest Virus.**—*Vet. Rec.* **54.** 135–136.

Protein fractions were estimated of the serum of three oxen hyperimmunized against rinderpest by intravenous injection of virulent blood and were compared with the serum protein changes produced in one ox immunized intrarumenally. Serum analyses were made at the time of immunization and 13, 19, and 25 days later. All showed the same type of serum-protein changes, namely a rise in the globulin content and a corresponding fall in the albumin content. In serum from those animals intravenously hyperimmunized, however, the decrease in the euglobulin fraction with successive bleedings was more rapid than in serum from animals immunized intramuscularly and intrarumenally, as recorded in previous experiments. It is suggested that this more rapid fall in euglobulin content may be associated with more rapid destruction of virus in this method of hyperimmunization. [See also *V. B.* **10.** 510].—M. H. KYAW.

SCHOFIELD, F. W., & BAIN, A. F. (1941). **Malignant Catarrhal Fever of Cattle.**—*Canad. J. comp. Med.* **5.** 294–297.

During the spring months of 1941, two widely spread outbreaks of catarrhal fever were diagnosed in Ontario. The last outbreak reported was in 1934, which leads the authors to suggest that the infection is always present, becoming manifest only occasionally as a severe and fatal outbreak. The report deals with the history, aetiology, occurrence, susceptibility, transmission, incubation period, symptoms, P.M. appearances, histopathology, and differential diagnosis of the disease.

—R. GWATKIN.

*BASSET, J. (1941). La fièvre typhoïde du cheval. **[Influenza of the Horse].**—*Rev. Méd. vét.* **17.** 5–77 [possibly 5–? and 77–?]. [Abst. from abst. in *J. Amer. vet. med. Ass.* **100.** 390–393].

Working with virus obtained from natural cases of equine influenza (" pink eye ") in Paris, B. set up the disease in healthy horses, with the following clinical course. After an incubation period of three days the temperature rose to 104°F. and reached its height the next day (105·8°F.). Up to this time the animal appeared well, but thereafter it rapidly sickened, showing stupor, anorexia, purulent conjunctivitis, and oedema of the limbs. From about the eighth day the temperature fell, whilst the general condition worsened, with difficult breathing and dark red mucosa. In a fatal experimental case the horse went down on the eighth day and after showing delirium died on the 11th day. In another case which recovered the temperature fell steadily from the eighth day and after about a week the symptoms disappeared.

Autopsy of the fatal case showed subcutaneous oedema, congested mucous membranes, petechiae and ecchymoses of the lungs, visceral pleura, pericardium and myocardium.

B. considered that the disease which he produced was purely a virus infection without any complications due to bacteria and that it could be readily differentiated from contagious pneumonia and infectious bronchitis. The latter, according to B., is characterized by an incubation period of three days followed by coryza and conjunctivitis, anorexia, moderate depression, and fever. These may recede and a day later the typical dry, deep, raucous cough begins and continues for some weeks, accompanied by some nasal and ocular discharge. If the animal is not rested and nursed, complications ensue [Brussels disease], and broncho-pneumonia sets in, which is often fatal [see also *V. B.* **12.** 374, where it will be seen that German workers are now calling this disease (infectious bronchitis) *ansteckende Katarrh der Luftwege*]. B. states that the blood in infectious bronchitis is not infective, thus distinguishing it from influenza, and that the bronchopneumonic complication is due to haemolytic streptococci. B. is further reported as stating, though whether from his own researches or not is not clear, that infectious bronchitis is transmissible with filtered or unfiltered lung lesion material by inhalation.—J. E.

GAMBAROV, G. S. (1940). O kontaktnom zarazhenii pri infektsionnoĭ anemii loshadeĭ. **[Contact Infection in Equine Infectious Anaemia].**—*Sovyet. Vet.* No. 6. pp. 11–14.

Chronic E.I.A. has little tendency to spread among horses and foals kept in good working and hygienic conditions. G. made observation in two studs, one consisting of 80–90 horses into which, three years previously, ten young horses had been introduced which, as foals, had been used as experimental animals for diagnosis of E.I.A.; the other consisted of 180–200 horses which were supplemented four years before by 48 horses imported from infected areas. After 3–4 years of close contact, only three horses from the original stock of the first stable were considered to be infected. On the other hand the ten horses introduced in the first stable and 16 of the 48 of the second were infected. G. advocates the destruction of animals proved to be infected. Twenty-nine foals born from healthy mares in one of the stables and kept for 6–8 months in close contact with adult horses, and two foals kept for three months in undisinfected premises which eight months previously had been inhabited by three infected foals, remained unaffected.—A. MOLDAWSKY.

TROITSKIĬ, I. A., & KLIMOV, N. M. (1940). Rol' zheludochno-kishechnogo trakta v zarazhenii infektsionnoĭ anemieĭ loshadeĭ. **[The Part Played by the Gastro-Intestinal Tract in the Spread of Equine Infectious Anaemia].**—*Sovyet. Vet.* No. 6. pp. 15–18.

Three series of experiments were carried out, in each of which two foals were used. Pure gastric juice

inactivates infective serum *in vitro* after exposure for one hour. Foals were infected by introducing 250 ml. of infective serum through an artificial fistula in the caecum or by drenching with 100 ml. of citrated blood taken from foals with acute E.I.A.

It is believed that the virus enters the body through the bowels. Infection *per os* depends largely on how long the virus is in contact with the gastric juice. If the virus is not exposed to prolonged action of the gastric juice, as when taken on an empty stomach or with large quantities of water, it passes undamaged and becomes absorbed in the intestines. The first febrile attacks by caecal and oral transmission were registered on the 15th–17th day which is approximately the same time as after subcutaneous inoculation.

The authors disagree with the view that the clinical type which develops, depends on the method of infection ; in their opinion the clinical type developed depends on the individuality of the animal host and on the quality of the virus.—A. MOLDAWSKY.

GAMBAROV, G. S., & BALITSKAYA, A. K. (1940). Polnyĭ otdykh v period karantinirovaniya zatrudnyaet diagnostiku infektsionnoĭ anemii. **[Diagnosis of Equine Infectious Anaemia].**—*Sovyet. Vet.* No. 2–3. 46–48.

A group of 14 horses exhibited marked symptoms of E.I.A. with periodical rises in temperature, colic, etc. The animals were isolated, rested, and immobilized as much as possible. In the course of the 193 days of observation, all the symptoms disappeared. Four mares were given intravenous injections of a filtrate from a mixture of sera from the 14 horses. Three of these mares remained healthy, but one developed symptoms characteristic of the disease.

Experiments have shown that in order to get a more or less accurate picture of a horse which has, for some time, been rested completely, it is necessary to bleed the animal thoroughly before taking a sample of blood to be tested. In general practice this is, however, not possible.—E. R. PARISER.

BOSH'YAN, G. M. (1940). Tsvetnaya reaktsiya dlya individual'noĭ diagnostiki infektsionnoĭ anemii loshadeĭ. **[Colorimetric Test for Diagnosis of Equine Infectious Anaemia. I].**—*Sovyet. Vet.* No. 10. pp. 19–20.

BOSH'YAN, G. M. (1941). Tsvetnaya reaktsiya dlya individual'noĭ diagnostiki infektsionnoĭ anemii loshadeĭ. **[Colorimetric Test for Diagnosis of Equine Infectious Anaemia. II].**—*Veterinariya, Moscow.* No. 1. pp. 12–17.

I. This method is based on the proportional alteration in the protein constituents of the serum of horses with E.I.A. and on the ability of sulphuric acid fuchsin solution to precipitate serum proteins and to give a colorimetric reaction with the nucleoproteins and thymonucleic acid, both of which are increased in E.I.A. serum due to disintegration of the nucleated blood cells and of the virus. Addition of sulphuric acid fuchsin to E.I.A. serum gives a colour different from that produced when added to normal horse serum ; also the colour, volume, and nature of the precipitate, and the time of precipitation, differ from those obtained with normal serum. These changes are of diagnostic value and B. claims that this reaction is reliable in acute, chronic, and latent cases of E.I.A.

II. B. elaborated two diagnostic methods, the drop test and the volumetric test, which are both based on the principle described in I. To avoid erroneous results, these tests should be repeated three times with intervals of 10–15 days.

Since the publication of I, more than 7,000 horses had been tested and two specially appointed commissions had checked the results obtained by the colorimetric test with those obtained by P.M., histological, and haematological investigations. It was found that from 1,500 horses known to be affected with E.I.A., 93–100% gave a positive reaction. Among 3,000 suspects, 65·4% reacted, and on the farms known to be free from E.I.A. only 29 (1·8%) out of 1,638 horses gave a positive, possibly erroneous, reaction. Horses affected with contagious abortion and piroplasmosis, and mallein reactors and horses with febrile reactions due to other causes, did not react to this test.—A. MOLDAWSKY.

BOSH'YAN, G. M. (1941). K biokhimii krovi loshadeĭ, bol'nykh infektsionnoĭ anemieĭ. Soobshchenie 1. **[Chemistry of Blood of Horses with Infectious Anaemia. I].**—*Veterinariya, Moscow.* No. 3. pp. 28–30. [French summary].

Periods of acute fever in animals affected by E.I.A. are biochemically characterized by the appearance in the blood of increased amounts of nucleinic acid and polypeptides. Due to the breakdown of proteins, purine (xanthine) and pyrimidine bases also accumulate in the blood and produce toxic effects. There is a sharp decrease in proteins, arginine, tyrosine and tryptophane, and an increase in products giving the Pauly reaction (histidine, uracil, cytosine). During chronic E.I.A. there is an increase in proteins in the serum as well as an increase in the general arginine and tryptophane content and a decrease in substances giving the Pauly reaction.

[In the summary it is stated that the substances which give the Pauly reaction decrease in acute cases of E.I.A. This is a contradiction to what is stated in the text.]—E. R. PARISER.

ALIKAEV, V. A., & KULAKOV, G. E. (1941). Izmeneniya v kislotno-shchelochnom ravnovesii organizma i aktivizatsiya protsessa u loshadeĭ, bol'nykh khronicheskoĭ formoĭ infektsionnoĭ anemii. **[Variations in the Acid-Base Equilibrium in Horses with Chronic Infectious Anaemia].**—*Veterinariya, Moscow.* No. 1. pp. 21–24. [French summary].

In horses affected with chronic latent E.I.A. the blood alkaline reserve is usually increased. In order to study the importance of this and its effect on the reappearance of the virus in the blood, a sharp change in the acid-base equilibrium was artificially effected by prolonged administration of dilute HCl in the drinking water. Although the blood alkaline reserve and the pH of the urine were decreased, no reappearance of the virus in the blood nor any activation of the latent chronic process was observed, neither were any changes observed in the Ca and P values of the serum of the experimental horses.—A. MOLDAWSKY.

ANDREEV, K. P. (1941). Epizootologicheskaya kharakteristika infektsionnogo entsefalomielita (IEM) loshadeĭ. **[Epidemiology of Equine Encephalomyelitis].**—*Veterinariya, Moscow.* No. 3. pp. 38–45. [French summary].

This is mainly a short review of Soviet literature on E.E. In A.'s opinion there is evidence to suggest that the disease is transmitted from natural " reservoirs " by means of blood-sucking and stinging insects.—A. M.

CASALS, J. (1941). **Diagnosis of Epidemic Encephalitis by Complement-fixation Tests.**—*Amer. J. publ. Hlth.* **31.** 1281–1284.

A description of the diagnosis of an outbreak of human encephalitis on both sides of the Canada-U.S.A. border, as due to the virus of Western equine encephalomyelitis. Diagnosis was made by C.'s complement-fixation test [see *V. B.* **11.** 600.] in a somewhat simplified form ; the technique is described.—J. E.

PIERCE, M. E., KEMPF, J. E., & SOULE, M. H. (1941). **Effect of Dilution of Neutral Mixtures of Eastern Encephalomyelitis Virus and Antiserum.**—*Proc. Soc. exp. Biol., N.Y.* **48.** 604–607.

The authors found that when a neutral mixture composed of a 1 : 100 concentration of Eastern E.E. virus with undiluted homologous antiserum was diluted 100 times with 0·85% saline solution and allowed to stand at room temperature (26°C.) for 15 min., it became reactivated. Further dilution of virus evoked no detectable reactivation.

The importance of having balanced mixtures of virus and antiserum, in order to bring about reactivation by dilution, was demonstrated.—ISOBEL W. BURTON.

TAYLOR, A. R., SHARP, D. G., BEARD, D., FINKELSTEIN, H., & BEARD, J. W. (1941). **Influence of Ultraviolet Light on Equine Encephalomyelitis Virus Protein (Eastern Strain).**—*J. infect. Dis.* **69.** 224–231.

E.E. virus protein was obtained by ultracentrifugation of infectious extracts of chick embryos. The purified material was dissolved in Ringer's solution and adjusted to pH 8·0–9·0. Extinction coefficients of this solution were measured in the region of wavelengths between 2,200 Å and 3,000 Å. The spectrum showed a region of strong absorption at about 2,600 Å, a broad minimum at about 2,450 Å, and an increase toward complete extinction at about 2,200 Å. Qualitatively the curve was similar to that of ribonucleic acid which is present in the virus protein to about 4·4% only. Some of the general absorption was thought to be due to the presence of cholesterol.

A study was made of the rate of inactivation of virus infectivity by monochromatic light of 2,537 Å from a low pressure mercury vapour discharge lamp. Solutions containing 0·01, 0·02, and 0·2 mg. virus protein per ml. were used. A linear relation between the log of the survival ratio and time of irradiation for dilute solutions was observed, indicating a primary photochemical reaction. With protein concentrations of 0·2 mg. per ml. the rate of inactivation decreased with time and the relation deviated from linearity. The decrease in rate of inactivation was paralleled by an increase in light absorption with time of irradiation, and it is suggested that this increase in absorption may explain the decrease in the rate of inactivation of virus in the more concentrated solution. Inactivation of infectivity did not affect the sedimentation pattern or constant of the protein, thus indicating that major changes in the size of the protein molecule did not occur with inactivation by ultraviolet light.—ISOBEL W. BURTON.

I. HIRLEMAN, W. B. (1942). **Rabid Foxes in Burke County, Georgia.**—*N. Amer. Vet.* **23.** 193–195.

II. TICE, F. J., & EVANS, W. M. (1942). **Rabies in a Wild Fox.**—*Cornell Vet.* **32.** 98–99.

I. Foxes had again become plentiful in Burke County in 1940, and following a history of a fox having been bitten by a hound which developed rabies, reports of foxes attacking livestock and people became common. Measures to reduce the numbers of foxes were introduced and vaccination of all dogs commenced. The dogs received two 5 ml. injections at two weeks' interval [type of vaccine not stated]. 2,900 dogs were vaccinated within three weeks. Four dogs developed rabies after vaccination, all within a period of 30 days. Of 258 fox heads examined, 109 were found positive for rabies. Very little rabies has been reported since 1940, and the fox population has been reduced by about 90%.

II. A case of rabies is reported in a wild fox in the central portion of New York state, which has been practically free from canine rabies for a number of years. There was no evidence to indicate the source of the virus.—S. J. GILBERT.

—. (1942). **Report of the Committee on Rabies.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 186–188.

There is no significant progress to report since the previous year [see *V. B.* **12.** 151.], but work will continue with the object of promulgating a basic plan for rabies control in each state, of proposing alterations in Federal statutes whereby co-operation with state authorities can be facilitated, and of obtaining a Federal survey appropriation to finance fresh control work.

A table shows the number of cases of rabies in each state in 1940. Rabies was diagnosed in 6,194 dogs, 260 cats, 25 horses, 326 cattle, 53 sheep, 4 goats, 71 pigs, 277 other species or unstated animals, and in 28 human beings (total 7,238).—J. E.

DAMON, S. R. (1942). **Recent Experimental Studies on Canine Rabies Vaccines.**—*N. Amer. Vet.* **23.** 186–192.

This is a general summary of the subject.—S. J. G.

SHAUGHNESSY, H. J., & ZICHIS, J. (1942). **Studies on the Treatment of Wounds in Experimental Rabies.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 182–185.

Experimental wounds in g. pigs infected with rabies virus were treated with fuming nitric acid or tincture of iodine, or irrigated forcibly with 20% "green soap solution". When treatment was commenced 30 min. after infection of the wounds, about 95% of the test animals survived ; the survival rate in the controls was 36%. When treatment was deferred for two hours, about 70% of the test animals survived ; the survival rate in the controls was 17%. Fuming nitric acid and green soap solution were about equally effective and were slightly better than iodine.—D. D. OGILVIE.

PUNTONI, V. (1940). Cinquant'anni di attività dell' Istituto Antirabbico di Roma. [**Fifty Years' Work at the Antirabies Institute at Rome**].—*Ann. Igiene (sper.).* **50.** 17–24.

The Antirabies Institute of Rome was founded in 1889. In 1919 the premises were enlarged and in 1920 phenolized vaccine was adopted instead of the Pasteur method. Puntoni's method, using phenolized vaccines of progressively virulent strains, was the modification finally adopted.

In 1923, the anti-rabies service was decentralized to improve conditions in the provinces, and to-day there are numerous provincial dispensaries under the control of the institute at Rome.

An account is given of the number of persons treated and the amount of vaccine prepared at the institute and its associated laboratories, including those in Libya and East Africa, since 1889.

The institute undertakes educational work amongst medical men and veterinary surgeons, and sanitary inspectors are also given a course of instruction.

With the adoption of phenolized vaccines the institute undertook to supply veterinary surgeons with vaccines for the protection of healthy dogs and for the treatment of valuable, infected animals. Both phenolized and glycero-phenolized vaccines are supplied. Autovaccines have been prepared for individual patients from material from the rabid animal concerned. 9,420 animals suspected of being infected have been examined at the institute during the 50 years since its foundation.—MILLER WATSON.

I. BODIAN, D., & HOWE, H. A. (1941). **The Rate of Progression of Poliomyelitis Virus in Nerves.**—*Johns Hopk. Hosp. Bull.* **69.** 79–85.

II. HOWE, H. A., & BODIAN, D. (1941). **The Effect of Spinal Transection on the Spread of Poliomyelitis**

virus in the Nervous System of the Rhesus Monkey. —*Ibid.* 86–91.

III. Howe, H. A., & Bodian, D. (1941). **Refractoriness of Nerve Cells to Poliomyelitis Virus after Interruption of their Axones.**—*Ibid.* 92–133.

IV. Howe, H. A., & Bodian, D. (1941). **Neuropathological Evidence on the Portal of Entry Problem in Human Poliomyelitis.**—*Ibid.* 183–215.

I. The lowest rate for the spread of methylene blue in mammalian sciatic nerve has been given as 4–5 cm. in four hours, but ordinary colloidal solutions do not spread along the sciatic nerve. The authors estimated that the rate of progression of poliomyelitis virus in the sciatic nerve of the rhesus monkey was approximately 2·4 mm. per hour. Following exposure of the cut end of the nerve to virus, the latent period before spread commenced was estimated to be about 11 hours.

II. The movements of poliomyelitis virus were studied in the central nervous systems of three groups of rhesus monkeys after transection of the spinal cord in the mid-thoracic region. Clinical and pathological evidence was obtained indicating that there is a pathway for the virus from the spinal cord to the wall of the gut *via* sympathetic nerve fibres, and thence to the brain stem along the vagus nerve.

III. During the regenerative process following the section of axones, various metabolic changes take place in the nerve cell. It was shown that at certain stages of this process the mitral cells of the olfactory bulb and the somatic motor neurons of the spinal cord were highly refractory to poliomyelitis virus.

IV. A comparison of the distribution of lesions in the brains of human subjects naturally affected with poliomyelitis and those in the chimpanzee following artificial inoculation indicate that in man the virus does not enter by the nose. Evidence suggests that the pharyngeal nerves may sometimes be the portal of entry, but many facts point to the alimentary tract as a focus of virus multiplication and to the spinal cord as the first part of the central nervous system to be invaded. The method of spread from the gut to the c.n.s. is uncertain, but it may be by way of the vagus and sympathetic nerve fibres.—John Francis.

Obukhovskiĭ, B. I. (1941). Immunizatsiya ovets protiv ospy virusom vaktsiny i virusom ospy ovets adsorbirovannym hidratom okisi alyuminiya. **[Immunization against Sheep Pox by Sheep Pox Virus and Vaccinia Virus Adsorbed on Aluminium Hydroxide].**—*Veterinariya, Moscow.* No. 3. pp. 46–55. [French summary].

Sheep pox virus vaccines, adsorbed on aluminium hydroxide, produce a strong active immunity in sheep. At the site of inoculation there appears a slight, closed induration which quickly disappears and which prevents dissemination of the virus. To prevent the formation and eruption of pustules and consequent dissemination of the virus, vaccines must be titrated and suitably adjusted before they are used, as different breeds of sheep react differently. Under field conditions aluminium hydroxide vaccines were used in 840 young ewes among which the disease had broken out. The generalization of the pox, which was of a mild nature, was observed in only 5·8%, whereas in sheep which had undergone ovination (direct infection of healthy sheep with sheep-pox scab material), there were considerable losses.—A. Moldawsky.

*Tarantino, G. B. (1940). Presenza della febbre catarrale degli ovini nel governo dei Galla e Sidama. **[Blue Tongue in Sheep in Galla and Sidama, Abyssinia].**—*Riv. Biol. colon.* **3.** 303–310. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 379].

Blue tongue in this part of Abyssinia appears to be identical, in symptoms and lesions, with the well known South African form of the disease. Malignant, subacute, and mild types are recognized. It affects mainly young sheep. Recovered animals may harbour the virus for up to four months. In the control of outbreaks, hyperimmune serum and attenuated vaccine have given fair results. Prevention consists of the isolation of affected animals and carriers, and the destruction of certain species of mosquitoes, especially *Stegomyia*, which are presumed to be responsible for the spread of infection. —M. Landau.

Doyle, T. M. (1942). **Crystal Violet Vaccine for the Prevention of Swine Fever.**—*Vet. J.* **98.** 51–64.

Following the favourable results of vaccination against S.F. with crystal-violet vaccine obtained by Dorset, McBride & Cole, the method was investigated to ascertain whether the vaccine would have equally good results in Great Britain and also the duration of immunity, the safety of the vaccine, and uniformity of potency. The crystal-violet vaccine was found to protect pigs against both artificial and contact infection. The immunity lasted at least ten months under laboratory conditions and vaccinated pigs did not transmit infection to in-contact pigs. Repeated lots of vaccine of a reasonably uniform potency were prepared. Immunity conferred by the vaccine is complete by about the 12th day so that in practice the vaccine should be restricted to herds free from S.F. and animals must be protected from infection for at least 12 days after vaccination. The vaccine was prepared by bleeding infected pigs on the 6th or 7th day, depending on the course of the disease, adding crystal violet and disodium phosphate (or phenol), and incubating for 14 days. The virus becomes inactivated by about the third day of incubation.

Two strains of S.F. virus obtained from America were used in preparing vaccine. These strains proved very suitable and were immunologically identical. English "field" virus proved to be of low potency, conferring no protection against a virulent strain whilst vaccine prepared from American virus protected against English "field" viruses. Vaccine prepared from citrated blood is as effective as that prepared from defibrinated blood and should permit of more economical production. No appreciable difference could be observed between crystal-violet vaccine prepared with phenol and one containing disodium phosphate.—S. J. Gilbert.

*Köves, J., Hegyeli, Z., & Bözsy, B. (1941). **[Which Protein Fractions of the Blood Contain Swine Fever Virus?]**—*Közl. Összehas. élet- és kórtan Köréből.* **29.** 79–88. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 377].

When 30% ammonium sulphate is added to blood serum containing S.F. virus, a protein fraction is precipitated which comprises a large percentage, but not all, of the virus present in the original volume of serum. The albumin fraction is left in solution and is infective for susceptible piglets; also when the precipitate is removed and more ammonium sulphate is added, to a final concentration of 50%, a further protein fraction is obtained which is virulent for young pigs.—M. L.

Kucherenko, I. I. (1941). Dykhanie i glikoliz krovi pri chume svineĭ. **[Respiration and Glycolysis of Blood Corpuscles in Swine Fever].**—*Veterinariya, Moscow.* No. 1. pp. 25–30.

Using Warburg's method, K. studied the respiratory and glycolytic processes of the blood of healthy pigs and those with S.F. He found that the blood sugar of normal animals was reduced by 28–36% after being

in the thermostat for 6–7 hours, and that of pigs with S.F. by only 2·9–12·8% ; parallel with the diminution of blood sugar there was an increase in blood lactic acid which was correspondingly lower in pigs with S.F. Corpuscular respiration could not be detected either in normal blood or in blood containing the virus.—A. M.

*Köves, J., v. Hegyeli, Z., & v. Bözsy, B. (1941). **[Conservation of Swine Fever Virus by Desiccation].** —*Közl. Összehas. élet- és kórtan Köréből.* **29.** 73–79. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 377].

Blood containing S.F. virus was frozen, dried at a high vacuum (0·01–0·03 mm. mercury), and stored in sealed vacuum tubes for a period of 82 days. Kept under these conditions, the blood lost hardly any of its virulence ; 1 ml. of a 1 : 10,000 dilution still killed inoculated piglets in 10–12 days. The period of incubation, however, was lengthened from 3 to 4 days.—M. L.

Agapov, S. I. (1941). O nalichii virusa influentsy v krovi, selezenke, zhelchi i moche u podsvinkov, bol'nykh influentsoĭ. **[Presence of Virus of Swine Influenza in Blood, Bile, and Urine of Sick Animals].** —*Veterinariya, Moscow.* No. 3. pp. 68–71. [French summary].

The author infected white mice intranasally with blood, bile, urine, and spleen emulsion from infected pigs and passaged the virus in mice, using an emulsion prepared from their lungs as inoculum. Although the lungs of the mice contained the virus, they did not always show macroscopic changes. A. concludes that the transmission of influenza by urine should be taken into consideration in the adoption of control measures. —A. Moldawsky.

Kairies, A. (1938). Ueber grippeartige Befunde bei Spontanerkrankungen von Meerschweinchen. **[Influenza-Like Symptoms in Spontaneous Infections in G. Pigs].**—*Arch. Hyg., Berl.* **121.** 89–101.

From the lungs of 21 out of 62 animals dying during a natural outbreak of influenzal type of illness in g. pigs, K. isolated a mixed culture of pasteurella, streptococcal, and pneumococcal organisms. In the remainder of the g. pigs, each of these organisms was isolated in pure culture or in combination with one of the others.

The effects of harmful dietetic and hygienic influences were studied and it was shown that the inoculation of influenza bacilli under ether anaesthesia " lit up " pasteurella infection. Various other non-specific stimuli produced the same effect. There is a useful review of the literature and the similarity of human and animal " influenza " is stressed. It was concluded that a virus was not responsible for the disease in the g. pigs and that the pathogenesis of " influenza " depends largely on non-specific influences.

It is emphasized that the normal flora and spontaneous diseases of any experimental animal should be studied before experimental work is begun. Experimental inoculation may merely " light up " the normal bacterial flora and continuous passage is then impossible. The importance of this in virus research is specially stressed.

[The term " influenza " has been used in the past to describe a group of diseases in man and animals with somewhat similar clinical symptoms. Various degrees of nasal catarrh and pneumonia are usually present, as in the outbreak described by K., but there may also be intestinal and nervous derangement. Now that specific viruses have been isolated from human and swine influenza, the word has come to have a more specific meaning, but there are typical outbreaks of human influenza from which neither influenza A nor B virus can be isolated. It is probable, therefore, that until our knowledge is more complete the word will continue to be used for describing a somewhat ill-defined clinical entity. Jones & Maurer (below) have shown that the serum of horses which have recovered from influenza does not contain significant amounts of neutralizing antibodies against influenza A or B viruses.]—J. F.

Jones, T. C., & Maurer, F. D. (1942). **Neutralization Studies of the Viruses of Influenza A, Influenza B and Swine Influenza with Equine Influenza Convalescent Serums.**—*Amer. J. vet. Res.* **3.** 179–182.

For many years there has been discussion concerning the relationship between human and equine influenza. Severe outbreaks of equine influenza in army remounts in the U.S.A. during 1939–40 afforded exceptional opportunities for studying this question.

Serum was collected from large numbers of horses in different parts of the country and neutralization tests were carried out using suspensions of mouse lung infected with three strains of human influenza A virus, one strain of human influenza B virus, and the Shope swine influenza strain 15. The tests were controlled with known immune serum. They did not reveal any significant content of neutralizing antibodies in the sera of recovered horses.—John Francis.

Hirst, G. K., Rickard, E. R., Whitman, L., & Horsfall, F. L., Jr. (1942). **Antibody Response of Human Beings Following Vaccination with Influenza Viruses.**—*J. exp. Med.* **75.** 495–511.

The authors used the red-cell agglutination technique of Hirst [*V. B.* **12.** 379.] to follow the antibody response induced in man by the inoculation of various types of epidemic influenza vaccine. Eleven different preparations comprising formolized chick embryo with or without the X strain of distemper virus, or infected allantoic fluid (unmodified) in the dry or frozen state or inactivated by heat, formalin, etc., were used to vaccinate large groups of human beings. Inactivation of the virus did not materially alter the antigenicity of the preparations.

There were wide individual variations which were unrelated to the prevaccination antibody level. With both influenza A and B viruses the average antibody response seemed to be directly connected with the amount of virus given. Antibody levels which were high two weeks after vaccination showed a marked drop at the sixth and ninth weeks respectively, and were still further reduced after five months.—R. E. Glover.

Eaton, M. D., & Martin, W. P. (1942). **Immunization with Inactive Virus of Influenza B : Comparison of Antibody Response with that Produced by Infection.** —*Publ. Hlth Rep., Wash.* **57.** 445–451.

Human volunteers were inoculated with the complex influenza A distemper vaccine of Horsfall & Lennette [*V. B.* **11.** 767.] and with a formalinized influenza B virus prepared from infected allantoic fluid. Rises in antibody level were ascertained by comparing the prevaccination sample of serum with serum taken 14 days after injection, the mouse neutralization technique being used. The increment in antibody was also obtained for a series of patients convalescent from the natural disease.

The results indicated that as far as circulating antibodies are concerned, vaccination with B virus raises the neutralizing antibodies to a level similar to that which follows infection : on the other hand, there was a much smaller increase in complement-fixation antibodies, an indication that the antigenic stimulus produced by inactive virus is not identical with that resulting from infection.—R. E. Glover.

Goodpasture, E. W. (1942). **Virus Infection of the Mammalian Fetus.**—*Science.* **95.** 391–396.

Extensive experience has shown that the fowl

embryo is more susceptible to numerous infections than the adult bird. Rabbit embryos are also known to be highly susceptible to vaccinia virus. This great susceptibility may be due to the abundance of young multiplying cells or lack of specific immunity.

Owing to the obvious importance of the placental union in determining whether or not infection of the foetus takes place, it is surprising to find so little knowledge concerning placental infection and the relative specific resistance of placental and foetal membranes. In order to study this problem, human skin and the human foetal membranes were grafted on to the fowl chorio-allantois. The graft was inoculated with virus 24–48 hours after implantation. Human amnion was easily infected with herpes simplex, variola, vaccinia, and the virus of mare abortion (DIMOCK & EDWARDS); the human chorionic grafts, however, were highly resistant to infection with all the viruses. Embryonic cells of the developing hen egg are not susceptible to infection with the virus of mare abortion; on the other hand, human amnion grafted on to the chorio-allantois does not become infected with fowl pox, *i.e.* each tissue retains its specific susceptibility. Skin from fowls completely immune to fowl pox became susceptible when grafted on to the chorio-allantois and became refractory when regrafted on to the immune fowl.

There is evidence that toxins or foreign proteins practically never pass even the haemochorial placenta, although antibodies even when of foreign origin readily do so; either the antibody is a smaller or more diffusible molecule than would be expected if it were identical with a serum globulin, or the chorion must exert some selective action.

In relatively few cases does the foetus contract from an infected mother such very contagious diseases as measles, mumps, chicken pox, or influenza, and it seems logical to assume that the exceptions are due to a breach of continuity, as the chorion itself is highly resistant to infection. It has also been noted that, following the inoculation of g. pig foetuses with the salivary gland virus, the chorionic epithelium is remarkably resistant to infection. On the other hand, in virus abortion of mares the foetus becomes extensively infected but the mother usually shows little or no evidence of disease; nothing is known about the pathogenesis of the mare's infection, although the foetus can be infected and abortion produced by inoculation of the pregnant mare.

The fact that foetal membranes can be grafted on the chorio-allantois and inoculated in this detached situation offers an opportunity for the study of specific resistance and susceptibility hardly possible in the intact host.—JOHN FRANCIS.

TRAUB, E. (1942). Immunbiologischer Vergleich von Geflügelpest-Virusstämmen aus Schlesien und Hessen-Nassau. **[Immunobiological Comparison of Strains of Fowl Plague Virus from Silesia and Hessen-Nassau].**—*Tierärztl. Rdsch.* **48.** 136.

The clinical symptoms of birds with fowl plague differed slightly according to whether they were infected with the Hessian or the Silesian strain of the virus; the incubation period for the Silesian virus was longer than that for the Hessian. Both, however, produced the respiratory symptoms characteristic of the Asiatic form of the disease.

Two experiments (two vaccinated birds and one control in each) were carried out which showed that a vaccine from the Hessian virus gave immunity against infection with the Silesian strain, but no tests could be made of the immunity conferred by the latter.

—T. BAKKER.

BAUMANN, R. (1942). Geflügelpest bei Fasanen. **[Fowl Plague in Pheasants].**—*Wien. tierärztl. Mschr.* **29.** 125.

An outbreak of fowl plague occurred amongst captured wild pheasants after their arrival from abroad and spread to poultry already present on the estate.

—T. BAKKER.

STOVER, D. E. (1942). **A Filtrable Virus, the Cause of a Respiratory-Nervous Disorder of Chickens.**—*Amer. J. vet. Res.* **3.** 207–213.

A disease of young chickens which may show respiratory and nervous symptoms has become of increasing importance in northern California. Although most frequent in chicks 3–10 weeks of age it has been observed in younger, and in mature birds. In some affected flocks nearly all birds showed respiratory symptoms, and 1–45% of the birds showed nervous symptoms. Most of the birds showing nervous symptoms died or were destroyed.

The disease could be transmitted to young chickens by intranasal, intratracheal, or subcutaneous inoculation with a saline suspension of infected air-sac tissue or by pen contact with infected chickens. The incubation period was 2–6 days. Ducks, pigeons, turkeys, and rabbits were refractory to artificial inoculation. The first symptoms noted were droopiness, occasional sneezing, and shaking of the head. Respiratory distress was apt to occur as the disease progressed. At the height of the outbreak, body temperature varied from subnormal to 111°F. Death resulting from an acute attack was usually preceded by coma. The nervous symptoms were of three types (a) muscular incoordination involving leg and neck muscles, (b) constant tremor of the body, and (c) paralysis of the legs.

Lesions of the respiratory-nervous disorder were primarily confined to that portion of the respiratory system lying below the bronchi. An invariable lesion in the newly affected chick was a cloudiness of the air sacs which later became oedematous, yellowish grey, and almost opaque. A purulent exudate, or particles of yellow caseous material adhered to the air-sac membranes. A frothy, colourless serous fluid was frequently seen in the body cavity. Oedema or congestion of the lungs and frothy mucus in the bronchi were present in a number of acute cases.

Filtration experiments showed that the agent was capable of passing all grades of Berkefeld filters. It was shown by means of cross-immunity experiments that the virus of this respiratory-nervous disorder was distinct from the viruses of infectious laryngotracheitis and infectious bronchitis.—F. D. ASPLIN.

MEYER, K. F., EDDIE, B., & YANAMURA, H. Y. (1942). **Ornithosis (Psittacosis) in Pigeons and its Relation to Human Pneumonitis.**—*Proc. Soc. exp. Biol., N.Y.* **49.** 609–615.

Psittacosis virus antibodies were demonstrated in complement-fixation tests of 105 of 237 sera of pigeons from various places in California and other states of the Union. The virus was isolated from both reacting and non-reacting pigeons, and the question of the specificity of the reaction is discussed.

Infection is probably acquired in early life. Recovery is followed by a lasting resistance which may be broken down by errors in feeding or management.

The pigeon virus is morphologically indistinguishable from the parrot and parakeet strains, but it possesses low pathogenicity for mice. A fatal infection is produced in parakeets and ricebirds by feeding or inhalation. Pigeons are clinically not affected by feeding or intramuscular injections but continue to harbour the virus. The authors point to the danger arising from

the presence of vast reservoirs of hosts for psittacosis virus.—F. D. Asplin.

Meyer, K. F., & Eddie, B. (1942). **Spontaneous Ornithosis (Psittacosis) in Chickens the Cause of a Human Infection.**—*Proc. Soc. exp. Biol., N.Y.* **49.** 522–525.

A case of pneumonia, apparently due to psittacosis, in a 54-year-old woman is described. The patient had had contact with chickens in which it was stated losses from " range paralysis " had occurred. P.M. examination of carcasses of some of the chickens revealed no gross lesions suggestive of psittacosis. Serial passage, however, of tissue emulsions through mice resulted in the development of a disease identical with psittacosis and in which " *Microbacterium multiforme* " could be demonstrated. The chicken virus was antigenically identical with two parakeet viruses with which it was compared. It produced on intramuscular injection in chickens a chronic wasting disease with latency in the spleen, liver, and kidneys. Ricebirds and parakeets were readily infected. Intracranial injection into various avian species resulted in fatal meningitis.

The sera of 12 chickens obtained from the patient's farm were employed in an agglutination test with " *M. multiforme* ". Three sera gave positive reactions at 1 : 4–1 : 16. The virus was obtained by serial passage through mice from 3 chickens giving negative reactions.

[Coles (see abst. below) states that " Lillie called the parasites, *Rickettsia psittaci*, in 1930. In the same year Levinthal proposed the name *Microbacterium multiforme psittacosis*. Most authors usually refer to the organisms as L.C.L. bodies, or Levinthal-Coles-Lillie bodies."—Ed.]—F. D. Asplin.

Coles, J. D. W. A. (1940). **Psittacosis in Domestic Pigeons.**—*Onderstepoort J. vet. Sci.* **15.** 141–148.

C. describes the first outbreak of psittacosis in pigeons so far recorded. Early in 1939, two pigeons were sent to Onderstepoort for diagnosis; numerous " colonies " of the psittacosis virus were found in lung and spleen smears from one bird and rare organisms in the liver and spleen of the second. Mice were inoculated with lung material, all but one dying of intercurrent infections. The survivor died of typical psittacosis which was transmitted to another series of mice. In another pigeon from the same owner, the disease was again diagnosed, but it was complicated with *Trichomonas hepatica* and *Salmonella typhi-murium* infections. No cases of psittacosis occurred in human beings who were in contact with the birds at P.M. examination or with the flock itself. At the end of 1940 the owner consented to have all his pigeons (282) destroyed, but no infection could be traced in any of the birds examined. It is suggested that the disease is not easily spread in pigeons.—E. M. Robinson.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

*Kamikawa, Y. (1940). **On the Tumour of the Cattle in Formosa (Report of the Second Investigation).** —*Jap. J. Derm. Urol.* ? p. 47. [Abst. from abst. in *Dtsch. tropenmed. Z.* **45.** 661].

This disease, formerly mistaken for TB., was first described by Kok & Roesli in 1926. In 1936, Lobel described 21 cases in the Dutch East Indies and K. verified the clinical, bacteriological, and histological characters of the disease in cases in Formosa. Both water buffaloes (3·8% of 1,463 examined) and Indian Zebu cattle (16·7% of 114 examined) were affected.

Heston, W. E. (1941). **Relationship between Susceptibility to Induced Pulmonary Tumors and certain Known Genes in Mice.**—*J. nat. Cancer Inst.* **2.** 127–132. [Author's summary copied *verbatim*].

A relationship between susceptibility to induced pulmonary tumors and certain known genes are shown.

Susceptibility is associated with the chromosome carrying the shaker-2 and waved-2 genes, as was evidenced by the fact that in the backcross animals the shaker-waved mice showed a lesser degree of susceptibility than did the nonshaker normal-coated mice.

Susceptibility is also associated with the chromosome bearing the flexed-tail gene. Normal-tailed backcross animals were more susceptible than were those with flexed tails.

No evidence was found for linkage between susceptibility to induced pulmonary tumors and the waltzing or waved-1 characters.

Bischoff, F., Long, M. L., Rupp, J. J., & Clarke, G. J. (1941). **Endocrine Factors Influencing Tumour Development. The Effect of the Gonadotropins and of Theelin upon the Marsh-Buffalo Adenocarcinoma and Lymphosarcoma.**—*Endocrinology.* **28.** 769–799.

Experiments are recorded on the Marsh-buffalo strain of mice which is susceptible to adenosarcoma of the breast, the incidence of which is increased in breeding animals. Parenteral doses of prolan, pregnant mare's serum (P.M.S.), or pituitary gonadotropin produced acinar development of the mammary gland in the young (two-month-old) mouse, comparable to that found in the untreated mouse at the age of one year. Exogenous theelin failed to produce this effect.

Sublethal doses (3·8 mg. per mouse over five months) were required to enhance carcinogenesis in the virgin female mouse, and even with these large doses the increases both in adenosarcoma of the breast and in lymphosarcoma were only doubtfully significant.

Prolan appeared to be without carcinogenic effect on the virgin female, whether given in small or large doses, but P.M.S. (750 U. per mouse over 11 months) and purified P.M.S. preparations (950 U. per mouse over 14 months) significantly retarded the onset and decreased the incidence of adenosarcoma in virgin female mice, as also did preparations of pituitary gonadotropin by subcutaneous or intraperitoneal injections.

Mice which had received doses of prolan, P.M.S. or pituitary gonadotropin were able to become pregnant after one year of treatment.—F. Aylward.

Olson, C., Jr. (1942). **A Study of Neoplastic Disease in a Flock of Chickens.**—*Amer. J. vet. Res.* **3.** 111–116.

A detailed study was made of neoplastic disease occurring in a small poultry flock. Thirteen cases amongst 48 chickens were encountered. These consisted of five cases of lymphocytoma, two cases each of fowl leucosis, fibrosarcoma, and carcinoma, and one case each of neurogenic sarcoma and haemangioma. —F. D. Asplin.

Johnson, E. P. (1941). **Fowl Leukosis—Manifestations, Transmission, and Etiological Relationship of Various Forms.**—*Tech. Bull. Va agric. Exp. Sta.* No. 76. pp. 21.

A comparison was made of the effect of two different leucosis inocula upon chickens of the same strain.

The inocula compared were the Beltsville strain of erythrogranuloblastic leucosis and the Virginia strain. Of 50 chickens inoculated with the Beltsville strain, 23 developed some manifestation of fowl leucosis, whilst 21 of 63 chickens inoculated with the Virginia strain developed some manifestation of the complex. Eight cases occurred in 98 control chickens.

The results are presented in support of the contention that erythro-, myeloid, and lymphoid leucoses are expressions of the same aetiologic agent; that blindness and paralysis are symptoms prevalent in the lymphoid form, and that lymphocytoma is another expression of the same disease.

Three cases of lymphomatosis occurred in a group of 26 ring-necked pheasants inoculated intravenously with blood from a case of neurolymphomatosis.

—F. D. Asplin.

Barber, C. W. (1942). **The Effect of the Rearing Environment upon the Incidence of Avian Leucosis Complex.**—*Cornell Vet.* **32.** 194–202.

A comparison of the incidence of neural and visceral lymphomatosis occurring in chicks reared on the experiment station plant and in chicks reared in other environments yielded interesting results.

The incidence of avian leucosis in three groups of chicks 100–500 days old reared away from the experiment station for 19–22 weeks was 0, 6·3, and 12·5% respectively, whilst 23 and 51% of the control chicks reared at the experiment station were affected. The incidence in chicks reared away from the station plant for 4, 10, 19, and 22 weeks was 46, 32, 13, and 10% respectively, whilst 62% of the chicks reared on the experiment station developed lesions of the avian leucosis complex.

The conditions under which the chicks were reared away from the experiment station cannot be considered as complete isolation, but exposure to contact with fowl paralysis was probably much less than that occurring in the control groups. Chicks reared away developed lesions much later in life than those reared at the station.—F. D. Asplin.

*Horstmann, H. (1941). Untersuchungen über den Einfluss der Umwelt auf die Entstehung der Hühnerleukose. **[Influence of Environment on the Occurrence of Fowl Leucosis].**—*Arch. Kleintierzucht.* **2.** 17–38. [Abst. from abst. in *Berl. Münch. tierärztl. Wschr.* Dec. 12th. 601. (1941)].

Details are given of 117 cases of fowl leucosis examined, with an account of the conditions in which the disease occurred in these birds.—J. Z.

IMMUNITY

Fernbach, E., & Rullier, G. (1941). Inactivation de la toxicité de la tuberculine vis-à-vis du cobaye tuberculeux, par action sous vide de quelques substances chimiquement définies. **[Inactivation *in vacuo* by Glutathione and Ascorbic Acid of the Toxicity of Tuberculin for Tuberculous G. Pigs].**—*C. R. Acad. Sci., Paris.* **213.** 214–216.

0·05 g. glutathione and 0·05 g. ascorbic acid were added to separate 5 ml. quantities of crude tuberculin, sealed *in vacuo*, and left for 55 days at 37°C. Tuberculin-sensitized g. pigs which were inoculated subcutaneously with 2 ml. of the diluted mixture of glutathione and tuberculin were in good health 24 hours afterwards. The authors claim that the toxicity of the tuberculin for tuberculous g. pigs is thus inactivated by glutathione. The results with the mixture of ascorbic acid and tuberculin were inconclusive.—J. P. Gardner.

Nikolaev, V. A. (1939). O zapozdalykh i vypavshikh reaktsiyakh na brutsellizat u baranov. **[Delayed and Negative Reactions to Brucellysate Intradermal Tests in Rams].**—*Sovyet. Vet.* No. 7. p. 48.

The brucellysate intradermal test was found to be more reliable than the agglutination test. Of 74 rams affected with orchitis, 71 failed to react to the aggln. test, which was repeated six times at a 3–4 weeks' interval, whereas 29 (39·2%) reacted to brucellysate. One ram affected with purulent orchitis with a positive blood agglutination titre in a dilution of 1 : 200 failed to react to brucellysate.

In six out of 52 rams the allergic reaction appeared after 72 hours instead of after the customary 24–48 hours.—A. Moldawsky.

*Thomsen, A. (1941). Blodprøvediagnostikkens Anvendelse ved Bekaempelse af Kvaegets smitsomme Kastning her i Landet. **[The Use of Blood Tests in the Control of Bovine Brucellosis].**—*Medlemsbl. danske Dyrlaegeforen.* p. 253. [Abst. from abst. in *Skand. VetTidskr.* **31.** 303 and 306].

T. reviews the uses of blood tests and states that they are essential in large-scale control work, but less useful in occasional farm work. He cites their value in a large area where over 60,000 tests were made in 1940. From this experience, T. suggests that in newly infected herds, and where the calf is born on the farm, it is usually uneconomical to slaughter reactors: instead calves should be vaccinated for three years, and the herd then tested. If more than 25% are reactors, the process should be continued, with tests every other year until the reactors number less than 25%, when they should be slaughtered at the owner's convenience.

Fitch, C. P., Boyd, W. L., Kelly, M. D., & Bishop, L. M. (1942). **Further Studies on the Significance of Suspicious Agglutination Reactions for Bang's Disease.**—*J. Amer. vet. med. Ass.* **100.** 23–26.

In a previous publication [*V. B.* **9.** 525.] the authors concluded that constant suspicious titres did not indicate that an animal was likely to spread infection, but as a result of the present studies, they modify this view. Suspicious titres include reactors at 1 : 25 or 1 : 50; incomplete reactions at 1 : 100 are considered highly suspicious and complete reactions at 1 : 100 are regarded as positive. These readings were recommended by the United States Live Stock Sanitary Association (1931-1932). Of 39 animals with "suspicious" reactions and 34 negative reactors housed together, two of the suspicious reactors increased in titre and *Brucella abortus* was isolated from them while two of the negative reactors developed positive titres and were found to be infected. Of 97 cattle with titres complete or incomplete at 1 : 100, 9 (9·3%) were found to be infected.—S. J. Gilbert.

Tsuverkalov, D. A., & Voshchinin, V. A. (1941). Vliyanie temperaturnogo faktora na reaktsiyu agglyutinatsii. **[Influence of Temperature on the Agglutination Test for Brucellosis].**—*Veterinariya, Moscow.* No. 3. pp. 11–15. [French summary].

Serum-antigen mixtures were heated in a water bath at 45°C. for 40 min., placed in an ice-salt mixture with a temperature of −15°C. for 15 min., stood for 30 min. at room temperature, and then read. This rapid test yielded satisfactory results.—A. Moldawsky.

ARBUSOV, P. N. (1940). Normal'nyĭ titr verblyuzh'ikh syvorotok v otnoshenii brutselleza. [**Normal Titre of Camel Serum in Relation to Brucellosis**].—*Sovyet. Vet.* No. 5. pp. 47–48.

Two hundred and seventy blood samples from healthy herds were examined and the agglutination titres, which were incomplete, were found to vary between 1 : 5 and 1 : 20. Of 49 camels from infected herds, 12 failed to react and 37 gave complete agglutination with Kuibyshev and Alma-Ata antigens in dilutions of 1 : 20–1 : 400. The first antigen proved to be more agglutinable than the second. In five camels infected experimentally with three-day-old cultures given by ingestion or intraconjunctivally, or applied to the scarified skin, agglutinins appeared in the serum after 15–30 days.

In A.'s opinion, a reaction should be regarded as positive when the agglutination is complete at a dilution higher than 1 : 20 and as doubtful with a similar result at 1 : 20. A proportion of infected animals do not react; retests of non-reactors should be carried out.—A. M.

PHILIPPI, O. (1941). Untersuchungen über den Einfluss der Mengenverhältnisse auf den Ausfall der Komplement-Schnellprobe auf Abortus Bang. [**Influence of Reagent Dosage in Diernhofer's Rapid Complement Test** ("*Ballungsreaktion*") **for Brucellosis**].—*Wien. tierärztl. Mschr.* **28.** 410–411. [Abst. only given].

P. discusses certain technical points of Diernhofer's test for brucellosis, which D. brought out in 1936 when he described it as a *Ballungsreaktion* [see *V. B.* **7.** 477].—J. G. CARR.

TRILENKO, P. A. (1941). Reaktsiya flokulyatsii po Meĭnike pri brutselleze rogatogo skota. [**Meinicke's Flocculation Test in Bovine Brucellosis**].—*Veterinariya, Moscow.* No. 3. pp. 20–27. [French summary].

It was found that Meinicke's flocculation test is not less reliable than other serodiagnostic methods. It may be used as a valuable addition to the agglutination test and as such it can satisfactorily replace the complement-fixation test. Comparing the results of the examination of 1,557 serum samples from brucella-infected and healthy herds, T. found that with positive sera, the Meinicke test agreed with the c.-f. test in 88%, in doubtful cases in 25·7%, and with negative sera in 97·1%. The Meinicke test agreed with the aggln. test in 66·8% of positive cases, in 42% of doubtful cases, and in 94·5% of negative cases.—A. MOLDAWSKY.

GORDON, R. F., & BRANDER, G. C. (1942). **The Value of the Rapid Whole Blood-stained Antigen Agglutination Test in the Eradication of Pullorum Disease.**—*Vet. Rec.* **54.** 275–279.

A total of 1,750 chickens was tested by the serum-tube test and the whole blood, stained antigen test. Agreement between the two tests was 98·34%. The tests gave conflicting results in 29 cases. Of these, 23 were positive to the serum-tube test and negative to the whole-blood test, whilst six were negative to the serum-tube test and positive to the whole-blood test.

Twenty-six of the 29 birds which gave conflicting results were obtained and retested at the laboratory. Nine of 22 birds originally negative to the whole-blood test, on retest gave good positive results to the same test, four birds which had given positive whole-blood and negative serum-tube reactions subsequently gave positive reactions to the tube test. Five birds which had originally given positive reactions to the tube test subsequently gave negative results to the same test.

Salmonella pullorum was isolated from 15 of the 26 birds examined; 14 of these had given positive reactions to the tube test and negative to the whole-blood test, while one gave the converse result. Of the 11 birds from which *S. pullorum* was not recovered, eight had given positive results to the serum-tube and negative results to the whole-blood test; three had given the converse result.

The pros and cons of the rapid whole-blood test are discussed.—F. D. ASPLIN.

SAN CLEMENTE, C. L. (1942). **An Electrophoretic Study of Pullorum-Agglutinating Chicken Serums.**—*Amer. J. vet. Res.* **3.** 219–221.

An electrophoretic study was made of some pullorum-agglutinating chicken sera to determine whether any significant differences appeared in the properties of the serum proteins which might explain the cause of nonspecific pullorum agglutination reactions.

The relative mobilities of the protein fractions of all the samples were uniform, but the percentage concentrations of the protein fractions were relatively irregular for the doubtful and positive sera, and it is suggested that this fact may help to explain inconsistencies in the plate agglutination test. The albumin and γ-globulin components showed the greatest deviations in the positive and some of the doubtful samples. It is suggested that the pullorum antibody is associated with the γ-fraction. The albumin concentration was decreased in sera of high titre.—R. A.

KULKA, A. M. (1942). **Studies on Antibody-Antigen Mixtures. I. Effect on Normal Living Excised Tissue.**—*J. Immunol.* **43.** 273–288.

This is a study of the response of normal living tissue to antigen-antibody mixtures. Excised uterus and strips of intestine of non-sensitized g. pigs were immersed in a bath of Tyrode's solution at 38°C. and treated with various antigen-antibody mixtures. Contractions similar to those produced by histamine became evident immediately. The reaction was found to be specific and to produce a specific state of refractoriness. The result was influenced by the quantitative relationship between antibody and antigen, and depended on a serum factor, which may have been complement.

—ISOBEL W. BURTON.

KOLMER, J. A. (1942). **Toxoids in Active Immunization against Gas Gangrene.**—*J. Immunol.* **43.** 289–296.

The immunizing powers of formol toxoids of *Cl. tetani, Cl. welchii, Cl. septicum,* and *Cl. oedematiens* against the respective toxins were tested. Three doses of toxoid were given at weekly intervals to one series of g. pigs, and three doses at intervals of three weeks to a second series. The animals were tested for immunity four weeks after the last dose, by injection of 2–25 M.L.D. of the respective toxins. Encouraging results were obtained with *welchii* and *septicum* toxoids, although their immunizing power was not as great as that produced by tetanus toxoid. Negative results were obtained with *Cl. oedematiens* toxoid.

K. believes that improved methods of production and concentration of gas gangrene toxins will make it possible to immunize simultaneously against gas gangrene and tetanus by administration of a mixture of toxoids.—ISOBEL W. BURTON.

ELLINGSON, H. V., & CLARK, P. F. (1942). **The Influence of Artificial Fever on Mechanisms of Resistance.**—*J. Immunol.* **43.** 65–83.

A series of experiments was carried out on rabbits and one on rats to determine the effects of artificially

induced fever on the various antibody responses, phagocytosis, immunity, and chloride content of the blood. Fever was induced by raising the temperature of the atmosphere surrounding the experimental animals.

It was found that severe fever in the region of 41·5°C. induced in rabbits during immunization with sheep red blood cells, typhoid vaccines, and egg albumen, impaired in varying degrees the specific antibody responses. More moderate fever in the region of 40°C. had no influence on the development of haemolytic antibodies.

In rabbits already actively immunized against *Salmonella typhi* induction of severe fever was followed by a rapid fall in the agglutination titre. In rabbits which were passively immunized with typhoid antiserum, severe fever caused a more rapid fall in the agglutination titre than occurred in the controls.

The chloride content of the blood was increased after fever. Fever either did not affect or only slightly depressed the complement content of serum of rabbits.

Severe fever induced during the early hours of intracutaneous infection of rabbits with type I pneumococci had no constant effect on the course of the ensuing infection.

Phagocytosis of *Staphylococcus aureus* by g. pig leucocytes *in vitro* increased with the rise in temperature, reaching the maximum at 40°C., the optimal zone being 39°–41°C. Phagocytosis of the same organism by human leucocytes showed the same phenomenon, reaching the maximum at 39°C., the optimal zone being 38°–40°C. These optimal zones are above the normal body temperatures of g. pigs and human beings respectively.—M. H. Kyaw.

Regoli, A. (1941). Uveiti allergiche sperimentali. [**Experimental Allergic Uveitis**].—*Boll. Soc. ital. Biol. sper.* **16.** 735–737.

Rabbits were made allergic by the injection of a sensitizing dose of normal horse serum into the anterior chamber of the eye. The anaphylactic dose was given intravenously at various periods after the first. Only in a small number of rabbits did uveitis result. Other rabbits were made allergic by intravenous or intramuscular sensitizing doses and the anaphylactic dose was given into the anterior chamber of the eye. By this treatment a higher percentage of the rabbits developed uveitis. The allergic reaction consisted of a mild inflammation which lasted for a few days only. In no case was the untreated eye affected.

Control animals had normal saline injected into the aqueous chamber.—Miller Watson.

Simon, F. A. (1942). **Human Allergy to Mammalian Sera.**—*J. exp. Med.* **75.** 315–322.

Four human beings who as a result of scratch tests were found to be allergic to many mammalian sera, possessed circulating, skin-sensitizing antibodies. These were studied by *in vitro* neutralization and subsequent local passive transference. The tests showed that some patients were sensitive to some degree to all the mammalian sera which were used (horse, cow, dog, pig, sheep, rabbit, g. pig, and rat), whereas others neutralized antibodies for themselves alone or for a proportion of the series.

It is postulated that various mammalian sera are characterized, not only by a species-specific factor, but also by a relatively small number of allergic complexes, some of which are present in certain sera but are absent in others.—R. E. Glover.

PARASITES IN RELATION TO DISEASE [GENERAL]

—. (1941). [**Report of Committee on**] **Parasitology.**—*J. Amer. vet. med. Ass.* **99.** 441.

Following a recommendation of the 1940 committee, a start had been made on a survey of the occurrence and importance of parasites of the various species of domestic and wild animals in the U.S.A. and Canada.

In Canada, copper sulphate and nicotine sulphate mixture remained the most popular worm drench for sheep. Some flock owners had used a phenothiazine preparation for the control of nodular worm. In Western Texas, *Haemonchus contortus* was the most serious parasite of sheep. Phenothiazine with either bentonite or molasses as a wetting agent was being extensively used and results had been excellent. Along the Gulf Coast of Texas, on the other hand, other species of stomach worm were also important and parasitic disease generally was more common and more serious. Since several treatments were necessary, phenothiazine was generally considered to be too expensive.

In Florida, increased cattle populations resulting from improved pastures "have resulted in a parasitic problem which threatens the whole structure of the rapidly increasing beef-cattle industry of that state". The parasitic diseases of all classes of domestic animals in Florida are considered of greater economic importance than any other disease factor, and together with faulty nutrition due either to poor management or to deficiencies constitute an economic problem.

Apart from the southern states, which were discussed in some detail, observations from widely separated areas indicated that parasitism in domestic animals was widespread and deserved serious attention.
—H. E. Harbour.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Hobson, R. P. (1941). **Sheep Blow-Fly Investigations. IX. On Some Physical Aspects of Sheep Dipping. X. On the Possibilities of Calomel for the Control of Sheep Maggots.**—*Ann. appl. Biol.* **28.** 261–272 and 273–281. [For previous parts, see *V. B.* **11.** 398].

IX. Investigations on the effect of wetting agents on arsenical sheep dips showed that the addition of a wetting agent to a dipping solution tends to decrease the amount of arsenic retained by the fleece and therefore to lessen protection against artificial maggot-fly infestation. Suint, the water-soluble fraction of wool yolk, is a wetting agent, and the progressive increase in the amount of suint in the bath during a dipping process results in a reduced protection against maggot fly infestation. Dipping sheep in a bath highly contaminated with suint makes the fleece more permeable to rain. The penetration of the fleece by rain and the leaching of soluble arsenic from the fleece is discussed.

X. A 0·2% suspension of calomel, applied as a dip, protects sheep against maggot fly attack for about the same period as arsenical sulphur dips. A dust containing 4% of calomel may also be used. The protective action is due to the production of an ovicidal vapour, probably mercury vapour, which penetrates to all parts of the fleece. It has, however, little effect upon keds, ticks, and lice.—W. Moore.

MAILEN, T. H. (1941). **Seasonal Occurrence and the Effect of Host Attractiveness on the Abundance of Stable Flies and Horn Flies on Cattle.**—*Proc. Okla Acad. Sci.* **21.** 19–21.

Counts were made, at half-hourly intervals during the forenoon, of the numbers of *Stomoxys calcitrans* and *Lyperosia irritans* on staked dairy cattle, at Oklahoma. A table and graph present the results, which are correlated with weather data. [Owing to the limited nature of the data, and the wide variations observed between individual animals, no conclusions can safely be drawn from the evidence.]—J. MACLEOD.

VANDERPLANK, F. L. (1941). **Activity of *Glossina pallidipes* and the Lunar Cycle (Diptera).**—*Proc. R. ent. Soc. Lond.* (A). **16.** 61–64.

Catches of *G. pallidipes* on days following moonlight nights were found to be significantly less than on days following moonless nights, and it is suggested that this fly is more active on moonlight nights than on dark nights, and therefore less active during the following day. Three male *G. pallidipes* were caught between 10.30 and 11.30 on a moonlight night, and two persons accompanying the catching party were bitten by tsetses which were thought to be *G. pallidipes*. MOGGRIDGE has reported the taking of male and female *G. pallidipes* at all hours of both moonlight and dark nights.

—U. F. RICHARDSON.

TATE, H. D. (1941). **The Biology of the Tropical Cattle Tick and other Species of Tick in Puerto Rico, with Notes on the Effects on Ticks of Arsenical Dips.**—*J. agric., Univ. Puerto Rico.* **25.** 1–24.

Boophilus annulatus microplus the tropical cattle tick and vector of tick fever of cattle, *Dermacentor nitens* the tropical horse tick, and *Rhipicephalus sanguineus* the brown dog tick, are widely distributed and of great economic importance in Puerto Rico.

B. a. microplus was found on cattle, sheep, goats, and horses, and the life-cycle, including both parasitic and non-parasitic development, was found to extend from a minimum of 41 days to a maximum of 300 days. Standard arsenical dips, containing 0·18–0·19% arsenious oxide, were effective in destroying *B. a. microplus*, practically all animals being free of engorged female ticks after the second or third dipping. The arsenical dips were also effective against *D. nitens*.—W. MOORE.

PARASITES IN RELATION TO DISEASE [HELMINTHS]

BETZ, W. (1941). Seuchenhafte Trematodenerkrankungen bei Gänsen. **[Epizootic Trematode Disease of Geese].**—*Tierärztl. Rdsch.* **47.** 526–527.

A markedly emaciated goose was examined and it was found that the stomach was lightly infested with *Amidostomum anseris*. The caeca had a tight, sausage-like appearance. The caecal mucosa was thickened, brownish-red in colour, brittle and dry at the surface, and came away in shreds, to reveal specimens of *Echinoparyphium recurvatum*.—E. R. PARISER.

SPIEGL, A. (1941). Ein seltener Parasitenbefund beim Huhn. **[A Rare Fowl Parasite (*Echinostoma revolutum*)].**—*Tierärztl. Rdsch.* **47.** 263–264.

During P.M. examination of an emaciated hen, the caeca were found to be exceptionally large, with stiff walls, the mucosa was thickened and reddened by petechiae. Deeply anchored in the mucosa were specimens of *E. revolutum*, which is usually a parasite of water birds and is thus unusual in a hen.—E. R. P.

*HATZKY, W. (1940). Beitrag zur Biologie, Haltung, Zucht und Bekämpfung der Leberegelschnecke (Galba truncatula) und verwandter Schnecken. Infektionsversuche mit Leberegelmiracidien. **[Biology, Rearing, and Control of the Liver Fluke Snail (*Limnaea truncatula*) and Related Snails. Infection with Miracidia].**—*Inaug. Diss., Hanover.* pp. 36. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **140.** 266].

There is apparently no relation between certain species of snails of the family Limnaeidae and the pH values of their environment, although optimum pH values for snails of this family lie between 7 and 8. The fact that, for instance, *L. truncatula* and *L. palustris* are usually found in different environments does not exclude the possibility of occasionally finding both forms together. It is not possible to distinguish between the two forms according to their individual " guide-plants ", nor could it be shown that there are other snails besides *L. truncatula* which may act as intermediate hosts of the liver fluke : up to the redia stage the normal development of the parasite could be well observed in other snails, but the larvae invariably died and no cercariae could be found. It seems impossible to change the pH values of snail-infected waters sufficiently to prevent the animals from living in these waters ; drainage of wet pastures and their protection against inundation remain the safest methods of control.—E. R. PARISER.

HOEPPLI, R. (1941). **Influence of Splenectomy on Susceptibility of Mice to Infection with *Taenia taeniaeformis* Eggs.**—*Proc. Soc. exp. Biol., N.Y.* **46.** 29–31.

Splenectomy increased the susceptibility of inbred mice to infection with *T. taeniaeformis* eggs. The mice were of a strain comparatively resistant to this parasite, but a few mice showed an individual resistance, abnormally high or low, which was not affected by splenectomy.—M. L. BINGHAM.

PIROSKY, I., DE PIROSKY, R., & FRANCESCHI, C. (1941). Polisacárido aislado de quiste hidático. **[Polysaccharide Isolated from Hydatid Cysts].**—*Rev. Inst. bact., B. Aires.* **10.** 230–232.

The authors isolated a polysaccharide from hydatid cysts both from the fluid and from the cyst wall. It was a white, amorphous substance insoluble in water and organic solvents ; it did not reduce Fehling's solution and was negative to the biuret and the iodine tests. It contained 2·55% nitrogen. Hydrolysis with 3% HCl produced a reducing sugar and left a residue insoluble in hot or cold alcohol. During hydrolysis, ether and acetone were also formed.

Biological tests showed that the substance had antigenic properties which produced complement-fixation antibodies.

Further study will be made to ascertain the possibility of using the substance as a diagnostic agent.

—MILLER WATSON.

*ROETTI, C. (1940). Verminosi gastro-intestinale dei bovini. **[Gastro-Intestinal Helminthiasis in Cattle in Italian East Africa].**—*Arch. ital. Sci. med. colon.* **21.** 171–178. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 124].

Gastro-intestinal helminthiasis constitutes a serious problem to the cattle industry of Italian East Africa. Amongst the helminths concerned are amphistomes, *Haemonchus* and other trichostrongyles, *Bunostomum*, *Oesophagostomum*, *Trichuris ovis*, and *Moniezia* spp. Calves are chiefly affected.—M. LANDAU.

KOLBE, F. (1942). Ist ein Trichinenvorkommen durch Aufnahme von Darmentleerungen möglich ? [**Is Trichinosis Acquired by the Ingestion of Faeces ?**]—*Z. Fleisch- u. Milchhyg.* **52.** 124–125.

The possibility of the transfer of trichinosis through eating of faeces by pigs and by other animals is discussed with reference to the published reports on the problem.—A. M. COPPING.

GEIGER, J. C., & HOBMAIER, M. (1939). **Trichinelliasis and Carnivorous Mammals (Bears). Report of Seven** [misprint for " **Severe** " ?] **Cases from Bear Meat.**—*Calif. West. Med.* **51.** 249–250.

A report from California of four outbreaks of trichinosis in 29 human beings who had eaten raw or improperly cooked bear meat which afterwards proved to be infested with trichinae.

Both bears kept in captivity and those in their native habitat showed a definite heavy infestation with trichinae. This was confirmed by laboratory examination of the carcasses of two bears from a park in San Francisco and also of bear meat brought from mountain areas.

CULBERTSON, J. T. (1942). **Active Immunity in Mice against** *Trichinella spiralis*.—*J. Parasit.* **28.** 197–202. [Author's summary slightly amended].

Mice became partially immune to *Trichinella spiralis* as a result of prior infections with the specific parasite. They likewise manifest an immune response after repeated vaccination with the antigens of the homologous worm. The immunity against *Trichinella* is directed particularly against the intestinal phase of the parasite, no matter whether the immune response is engendered by prior infection or by vaccination.

CULBERTSON, J. T. (1942). **Passive Transfer of Immunity to** *Trichinella spiralis* **in the Rat.**—*J. Parasit.* **28.** 203–206. [Author's conclusions copied *verbatim*].

Immunity to *Trichinella spiralis* can be passively conferred upon normal rats by transferring to them serum from a rat immunized by prior infection. As might be expected, the immune response of passively immunized rats is less powerful than that generally manifested by actively immunized animals.

SCHMID, F. (1941). Zur Biologie der Haarwürmer (Capillaria) des Geflügels. [**Biology of** *Capillaria* **of Poultry**].—*Berl. Münch. tierärztl. Wschr.* March 14th. 133–134.

No relationship could be found between the number of *C. annulata* eggs in the faeces of cockerels and the number of adult worms present. It was found that *C. annulata* is capable of living at least 45 days in the host.—E. R. PARISER.

ANTIPIN, D. N. (1941). Terapiya askaridoza i untsinarioza enotovidnykh sobak. [**Treatment of Ascariasis and Uncinariasis in Raccoon Dogs**].—*Veterinariya, Moscow.* No. 3. pp. 93–97. [French summary].

On the farm where the experiments were carried out, faecal examinations showed that 100% of the adult animals (*Nyctereutes procyonoides ussuriensis*) were affected with uncinariasis and that 11% of the adults and 44% of the young animals were infected with ascariasis. Eggs of *Toxocara canis* and *Toxascaris leonina* first appeared 25–33 days after birth, whereas eggs of *Uncinaria stenocephala* were found between the 30th and 40th day. In treatment of ascarid-infested pups, 1–1½ months old, with tetrachlorethylene, only doses of 0·3 and 0·4 ml. gave good results (92·8% efficient). Adult raccoon dogs infected with ascariasis and uncinariasis were successfully treated with 1·5 and 2 ml. of tetrachlorethylene. 1 ml. doses of carbon tetrachloride in gelatin capsules gave positive results, and 1·4 ml. doses very good results in adult animals. 2·0 ml. caused vomiting, etc.—E. R. PARISER.

PETROV, A. M. (1941). Znachenie intrauterinnoĭ invazii v epizootologii toksocaroza serebristo-chernykh lisits. [**Importance of Uterine Invasion by** *Toxocara* **in Silver Foxes**].—*Veterinariya, Moscow.* No. 3. pp. 84–92. [French summary].

A detailed account, accompanied by various tables, is given of the invasion of silver foxes by *T. canis*. Toxocarosis is very widespread among foxes, but only young animals, 17–66 days old, are fatally affected. *T. canis* spreads most rapidly during the first months of the animal's life (especially April-June); after this initial period of active propagation the speed of invasion diminishes, to reach a new peak of activity in September. In adult animals, November and February are the months during which the disease spreads most rapidly. The discovery of migrating larvae of *T. canis* in the bodies of 27·2% of still-born animals points to the importance of intra-uterine invasion. Examination of liver, diaphragm muscles, uterus, and bladder of non-pregnant adult animals did not reveal the presence of any larvae.—E. R. PARISER.

KOPYRIN, A. V. (1941). Prizhiznennaya diferentsial'naya diagnostika strongilyatozov loshadeĭ po lichinkam invazionnoĭ stadii. [**Differential Diagnosis of Invasive Stages of Equine Strongyles**].—*Veterinariya, Moscow.* No. 1. pp. 77–84. [French summary].

Exact diagnosis by examination of the eggs and of the first- and second-stage larvae is with few exceptions impossible; on the other hand the third stage infective larvae possess characteristics which enable the identification of the corresponding genus and in some cases of the species. K. gives eight tables and 30 instructive figures representing the various stages of the following larvae: *Strongylus equinus, S. vulgaris, S. edentatus, Craterostomum acuticaudatum, Triodontophorus serratus, T. tenuicollis, T. brevicauda, Trichonema* (*Trichonema*) *longibursatum, T.* (*T.*) *calicatum, T.* (*T.*) *hybridum, T.* (*Cylicocercus*) *catinatum, T.* (*Cylicocyclus*) *nassatum, T.* (*C.*) *insigne, T.* (*Cylicodontophorus*) *mettami, T.* (*C.*) *ultrajectinum, T.* (*Cylicobrachytus*) *brevicapsulatum, Poteriostomum imparidentatum, P. ratzii, Gyalocephalus capitatus, Trichostrongylus colubriformis,* and *Dictyocaulus arnfieldi*.—A. MOLDAWSKY.

EVELETH, D. F., & HILSTON, N. W. (1941). **Contributing Factors Causing Death in Sheep Infested with the Nodular Worm.**—*Vet. Med.* **36.** 449–451.

Although pasture rotation and the use of various anthelmintics are reasonably effective control measures in preventing the development of acute *Oesophagostomum columbianum* infestation, they have no effect upon the nodules which this parasite produces and which persist throughout the life of the sheep. While nodules in moderate numbers apparently do not adversely affect the host in most cases, they may, according to observations reported by the authors, be a secondary source of trouble. Thus, distension of the gut and rupture of the nodules with ensuing peritonitis may occur if sheep are allowed foods, such as alfalfa, which produce excessive amounts of gas. Similarly, at lambing time mechanical pressure may cause rupture of the nodules with resulting peritonitis.—J. N. OLDHAM.

KATES, K. C. (1942). **Viability of Eggs of the Swine Thorn-Headed Worm (Macracanthorhynchus hirudinaceus).**—*J. agric. Res.* **64.** 93–100.

The effects of various environmental factors on the eggs of *M. hirudinaceus* were studied. The test of viability of the eggs was the ability of larvae hatching from them to infect final instar grubs of the green June

beetle, *Cotinis nitida*. Eggs in water were exposed to temperatures of 45°–100°C. No eggs survived instantaneous exposure to 70°C. or 10 minutes' exposure at 60°C. Exposure to temperatures varying from –10°C. to –16°C. for 140 days failed to destroy the majority of eggs. With a few exceptions, freezing in water was more destructive than freezing in a dry state. Continuous drying at 21°–26°C. for 265 days and at 5°–9°C. and 37°–39°C. for 50 days did not reduce viability. Alternate wetting and drying at 37°–39°C. reduced the number of viable eggs on soil in 368 days. At 2°–5°C. many eggs were viable after 551 days. Most dry eggs were killed after exposure to ultra-violet irradiation in a single layer after 10 min., and those in several layers after 40 min. Some eggs in shallow water survived irradiation for 120 min.—M. L. Bingham.

Lane, C. (1942). **The Name of the Nonperiodic *Wuchereria* of the Pacific.**—*Trans. R. Soc. trop. Med. Hyg.* **35.** 327–332.

The International Code of Zoological Nomenclature is discussed, and particularly the Official List, which includes those generic names which are free from any operation of the Law of Priority. The acceptance 20 years ago of the name *Schistosoma* is cited as an example of the application of this part of the Code in order to create order out of years of chaos.

The name *W. pacifica* has been proposed on the grounds of non-periodicity of larvae in the skin blood, " certain distinctive clinical features " or " certain distinctive biological peculiarities ", a defined geographical distribution, and a distinctive intermediate host. It is pointed out that these grounds are not acceptable and that therefore *W. bancrofti* remains the valid name.—M. L. Bingham.

DISEASES, GENERAL

—. (1942). **The Control of Certain Diseases of Dairy Cows.**—*Vet. Rec.* **54.** 194–196.

A scheme to control mastitis, contagious abortion, temporary infertility and Johne's disease has been prepared by the National Veterinary Medical Association of Great Britain and Ireland in consultation with the Animal Health Division of the Ministry of Agriculture and Fisheries and the National Farmers' Union, the Agricultural Research Council having approved the methods to be employed.

The veterinary practitioner will undertake to apply these approved methods and for the services thus rendered the farmer will pay a fixed sum annually. The cost per year to the farmer in England will be 12s. 6d. for each cow up to and including ten, and 10s. per head in herds above ten. A charge of 2s. 6d. will also be payable in respect of each heifer from the age of six months to the day of first calving. These fees will be subject to a discount of 10% during the second and 20% during the third year.

Travelling expenses at the rate of fourpence per mile for distances in excess of ten miles can also be claimed by the veterinary surgeon, whilst in those cases of mastitis where it is necessary to give sulphanilamide a charge of 2s. 6d. will be made. The Ministry of Agriculture and Fisheries will supply the veterinary practitioner with sulphanilamide at a low cost and will also provide free laboratory facilities and abortion vaccines.

Mastitis.—The various types are briefly reviewed. For the control of mastitis due to *Streptococcus agalactiae*, the farmer is to be instructed in the use of the strip cup test which will be supplemented by clinical examinations by the practitioner at regular intervals. The farmer will also be required to adopt routine measures in the management of the milking herd, keep records, and notify the practitioner of acute cases.

Contagious abortion.—Blood testing with the isolation and disposal of reactors will be carried out in suitable herds. In other herds the method of control will be by vaccination, two vaccines being issued for this purpose by the Ministry. The standard vaccine will be the U.S.A. strain 19 whilst the other vaccine will be Wye 45 (20), a single dose being used in the case of the standard vaccine, and two doses in the case of the Wye vaccine which does not evoke a positive reaction to the blood test.

The farmer will be required to report abortions to the practitioner, isolate cows with uterine discharges, destroy infected materials, and disinfect contaminated premises, whilst the veterinary surgeon will take blood samples, give advice, and inject vaccines.

Temporary infertility.—The farmer will be required to keep records of oestrus, service, calving, etc., and to report to the practitioner any cow which does not come into service within 60 days of calving or which is not pregnant after three successive services. The veterinary surgeon will carry out examinations for pregnancy and treat or give advice concerning those animals found not to be in calf, collect material for laboratory examination, and give such other attention as may be necessary.

Johne's disease.—The farmer will report any suspicious cases to the veterinarian who will carry out necessary diagnostic measures and advise on the control of the disease.—H. E. Bywater.

McEwen, A. D. (1942). **Notes Concerning Abortion, Mastitis and Sterility.**—*Vet. Rec.* **54.** 155–157. Discussion pp. 157–158.

The following data, containing probably the most authoritative figures available relating to the incidence of contagious abortion in England, provide a basis upon which to assess the value of the vaccination policy introduced on June 1st, 1942. It is, however, the author's view that, although the case for vaccination is proven, extended field trials should still be carried out, and he outlines the conditions necessary for such trials.

Of 4,293 pregnancies, there were 3·3% abortions among negative reactors, 1·2% among doubtful reactors, and 12·9% among positive reactors (total abortions 17·6%). Of 1,801 first pregnancies (first-calf heifers), the corresponding figures are 2·1%, 0·3%, and 6·3% (total 8·7%).

Vaccination of calves is considered preferable to that of heifers and cows, since the genitalia are immature and there is little risk of establishing infection.

The author compares the merits of the smooth strain 19 with his own rough strain 45 (20), emphasizing the ability of the latter to produce immunity whilst only stimulating the development of agglutinins to a negligible degree.

Referring to mastitis due to *Streptococcus agalactiae*, the incidence of which can only be guessed at, the author points out that if the generally accepted view is correct that the majority of infections are localized to the milk cistern, then any attempt to produce tissue immunity by vaccination will be a waste of effort. Control measures depend largely upon the detection of carriers by laboratory means, but the assessment of the results is most difficult. Although it is logical to assume that unless such carriers are detected, no laborious

measures of control in the byres are likely to be successful, yet there are many herds where no such precautions are taken and where cases of mastitis are rare.
—N. S. BARRON.

CASE, C. H. (1942). **Monthly Herd Examination to Control Bang's Disease, Mastitis and Sterility.**—*Cornell Vet.* **32.** 135–140.

An advisory article for practitioners, advocating close contact with the farm, rather than waiting for specific calls by the farmer. Procedure according to the methods advocated would involve much private laboratory work and more personal attention to detail than is usually considered feasible.

LÜTJE, F. (1941). Wild und Wildkrankheiten im Regierungsbezirk Stade. **[Game and Diseases of Game in the District of Stade].**—*Tierärztl. Rdsch.* **47.** 267–275.

The occurrence and distribution of game and diseases of game in Stade are similar to those found in other game areas in Central Europe. L. describes the P.M. findings in 244 specimens of game of 15 different species, the majority being deer (31%) and hares (54%). In the deer, parasitic infestation is of greater importance than infectious diseases, constituting 87%. In the hare, the reverse is true, 78% of diseases being of bacterial origin. The chief parasites of the deer are liver fluke, lungworms, and stomach worms in about equal proportions. In the hare the chief infection is with *Pasteurella pseudotuberculosis rodentium*. An account is given of bacteriological methods for the isolation and identification of this organism in order to differentiate the condition from pasteurellosis and salmonellosis, in which the P.M. lesions are similar. Three cases of poisoning by chemical fertilizers in deer and two cases in the hare are recorded; 22% of all game examined had lesions which were not attributable to bacteria or parasites and were chiefly of traumatic origin.
—ALEX B. PATERSON.

—. (1942). **Report of Committee on Miscellaneous Transmissible Diseases.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 188–191.

Thirty-one states during 1941 reported 24,816 cases of infectious equine encephalomyelitis. Fourteen states had no cases. Three failed to report. Cases west of the Mississippi river comprised 96% of the total for the country. The mortality rate due to the Western type remained about 25%, the rate due to the Eastern type being considerably higher. Numerous cases of encephalomyelitis in man were recorded. Most were due to Western type virus.

Experiments in hide disinfection have shown that both sodium bifluoride and sodium silicofluoride in dilutions of 1 : 100,000 are effective, after 24 hours' soaking, against the virus of vesicular stomatitis. By analogy, it is assumed that these substances would also be effective against the virus of foot and mouth disease.

Recent reports show a marked increase in the incidence of bovine mastitis due mainly to *Streptococcus agalactiae*. The disease can be controlled successfully by hygienic measures. Relatively good results have attended the use of entozon, acriflavine, novoxil and tyrothricin (gramicidin), but none of these substances has yet been used extensively.—D. D. OGILVIE.

—. (1942). **Report of the Committee on Transmissible Diseases of Swine.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 48–50.

A disease survey in the pig-breeding states during 1941 indicated that despite widespread vaccination, swine fever remained the chief cause of loss. The incidence of swine erysipelas and the enteric disorders showed some tendency to increase, but swine influenza was less prevalent than before. Brucellosis of swine was reported in a few states. Vesicular exanthema in swine re-appeared in California.

Concern is again expressed regarding the dangers of spread of disease through uncontrolled community sales and markets and during transit by road.—D. D. O.

—. (1942). **Report of the Committee on Transmissible Diseases of Poultry.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 150–154.

Many unreliable results in plate testing for pullorum disease have been due to poor antigen. A new antigen has recently been issued by the Bureau of Animal Industry. Preliminary reports indicate that it is very satisfactory. Nonspecific reactions to the plate test have recently appeared in pullets coming into production. Most of these birds gave doubtful reactions to the tube test. Retests after 2–3 months were generally negative. Nonspecific reaction in a flock can be diagnosed by the unexpected and unreasonably high percentage of reactors and by the conspicuous uniformity of the degree of agglutination. Studies have revealed that *Salmonella pullorum* can be isolated frequently from the intestines of chicks, growing birds, and adults from tested stock showing a low percentage of reactors and little or no mortality from pullorum disease. Besides *S. pullorum*, 14 other salmonella strains were isolated. None of these was related antigenically to *S. pullorum*. They did not appear to be connected, therefore, with the nonspecific reactions. Pullorum positive and negative sera were also found to agglutinate some of the shigella and escherichia groups of organisms isolated from chickens. A few other diseases are also mentioned.
—D. D. OGILVIE.

—. (1940). **Regional Conferences on the National Poultry Improvement Plan, June 1940, in Atlanta, Ga., June 3 and 4, Tulsa, Okla., June 6 and 7, Salt Lake City, Utah, June 10 and 11, Chicago, Ill., June 13 and 14, Trenton, N.J., June 18 and 19.** pp. 103. Washington, D.C.: U.S. Dep. Agric., Bureau of Animal Industry, Animal Husbandry Division. [4to] [Mimeographed].

This is a report on five regional conferences held during 1940 to discuss the administration and operation of the National Poultry Improvement Plan. The main purposes of the conferences, which were attended by poultry breeders, hatchery men, representatives of official state agencies, and others, were to consider the fundamental problems of breeding and of pullorum disease control. A full digest of the open discussions is given, and the portion of greatest veterinary interest is dealt with under the heading of " Pullorum control and eradication problems ".

The main points brought out in this discussion were :–

(1) That the minimum age for testing pullets should be five months, as pullets with undeveloped ovaries, though infected, may not react to the agglutination test. Negative findings cannot be interpreted in the testing of young birds.

(2) That where second or third tests have been applied to a flock, the number of reactors and viability of chicks have greatly improved, and multiple testing should be encouraged.

(3) That pullorum disease in turkeys is of importance in certain localized areas, and that in these localities there is considerable danger in hatching turkey eggs along with eggs from pullorum-tested chickens. Turkey testing is being carried out in a number of states both by the tube method, and by the stained antigen, whole-blood method (the antigen being

the same as that used for chickens), and in general the results have been encouraging. Comparative tests are being carried out with an experimental antigen prepared for the testing of turkeys.

(4) That certain commercial antigens were not up to standard. A resolution was adopted requesting the Bureau of Animal Industry to manufacture both stained and tube antigen for use under the plan.—R. F. G.

DOBBERSTEIN, J., & DINTER, W. (1941). Beiträge zur Sektionsstatistik der Kolik des Pferdes. **[P.M. Statistics of Cases of Equine Colic].**—*Arch. wiss. prakt. Tierheilk.* **76.** 256–286.

This is a detailed classification of cases of equine colic examined P.M. by the authors at the Berlin veterinary college during the years 1922–39. During this time 1,121 horses were autopsied, of which 555 (49·42%) had died from " colic ". Most of the animals were draught horses. The findings are compared with those recorded by other workers.

The distribution of the main types of colic in 3,500 cases, including the 555 at the Berlin college, was as follows :– volvulus of the colon, 14·5% ; gastric dilatation, 13·5% ; gastritis and enteritis, 12·5% ; volvulus of small intestine, 11·8% ; impaction of colon, 10·3% ; impaction of caecum, 6·5% ; impaction of small intestine, 5·6% ; incarceration (internal and external hernia), 5·4% ; tympany, 3·7% ; thromboembolic colic, 3·3% ; strangulation (lipoma, fibrous adhesions), 2·8% ; intussusception, 2·1% ; flexion (caecum or colon bent on itself), 0·4% ; other causes, *e.g.* parasites, calculi, sand, neoplasms, 6%.

Each variety of colic is dealt with in some detail and the incidence in animals of various ages and at different times of the year is illustrated by graphs. Most cases of colic occurred during June and this was especially so when the cause was impaction ; there was a much smaller peak in December-January. It is suggested that further observations on these lines may help to increase our knowledge of this very serious group of conditions classed together as " colic " and responsible for 30–50% of the mortality among horses.—E. G. WHITE.

RIPPON, S. R. (1941). **Kumri.**—*Rep. civ. vet. Dep. Burma, 1940–41.* pp. 9–13.

This is a progress report of many years' observations. Symptoms of the disease consist of varying degrees of posterior incoordination, apart from which the animals appear healthy. Two affected mares were kept under observation for four years. During that period they foaled normally and the paraplegic symptoms became less severe, probably as a result of new reflex paths having been set up which were partly replacing those destroyed during the course of the disease.

Lesions are constantly found in the spinal cord. They can be felt by running the fingers down the cord, and consist of soft sharply demarcated areas in the substance of the cord. The lesions vary in size from a few millimeters to 3 cm. and occur in all parts of the cord except the cervical portion. The lumbar region is the first to be affected. No macroscopic changes in the meninges are visible over the softened areas or in the brain or its membranes.

Sections through the soft areas show a decrease in size of one or both of the lateral crescents of the grey matter, more noticeable in their anterior than their posterior horns. In the white matter, there are a few small localized areas which differ slightly in colour from, and appear more glistening than, the rest of the white matter. On slight pressure a few drops of a thick gelatinous fluid exude from the cut surface. The alteration in colour is more pronounced after fixation in formalin.

Histological examinations show specific lesions in the spinal cord and changes in the kidneys and cerebellum. In the spinal cord, the changes consist of degeneration and varying degrees of neuronophagia, punctate haemorrhages, and lymphocytic infiltration of the grey matter, and of localized areas of partial demyelinization in the white matter.

Changes in the kidneys consist of hyperaemia and sclerosis of the arterioles. Occasionally, distension of the venous spaces between the renal tubules may be observed. In the cerebellum, slight neuronophagia and lymphocytic infiltration were seen.

A chronic irritation is set up, leading to a low-grade inflammation resulting in slow destruction of some neurones in the spinal cord and cerebellum. The neurones lose their extracellular processes, shrink, become invaded by mononuclear cells, and finally disappear. They are replaced by proliferative glial elements. Localized hyperaemia and haemorrhages occur in the regions where nerve cell destruction is going on, and infiltration with lymphocytes appears. With the death of the neurones, the axon fibres which originate from them die, first undergoing demyelinization and degeneration. Nerve paths normally carrying impulses of voluntary movement to the posterior part of the body are destroyed and incoordination results. At a certain stage the process of neurone destruction ceases and the disease becomes static. In mild cases, new reflex paths may be set up in other nerve fibres after a long time and thus normal function may be restored to a certain degree.

The aetiology of the condition is still unknown ; no bacteria can be demonstrated. All attempts at cultivating a causal agent on the chorioallantois of the developing chick embryo and at transmission to laboratory animals, dogs, and horses failed.—M. H. KYAW.

SAXINGER, G. (1941). Bekämpfung der Fohlenlähme durch planmässige Schutzimpfung. **[Control of Navel Ill in Foals by Systematic Vaccination].**—*Berl. Münch. tierärztl. Wschr.* Dec. 26th. 612–614.

S. deplores the high mortality rate due to navel ill in foals in Germany, amounting to 30% of foals born in some districts. He claims that immunization with polyvalent serum and vaccine gives good results and that such losses are therefore unnecessary. He recommends the adoption of the following procedure :– improved hygiene ; adequate vitamin D and minerals in the diet of the mare ; passive immunization of mares likely to be infected, with polyvalent serum in the fifth to tenth months of pregnancy, followed 1–4 weeks later if possible by the use of polyvalent vaccine to bring about active immunization of the mare and passive immunization of the foal ; simultaneous inoculation of the foal with serum and vaccine immediately after birth when extra precautions seem desirable, with further inoculations if necessary, and disinfection of the navel. —ANN F. RUSSELL.

RUBARTH, S. (1942). Hepatogena och epiphreniska abscesser med inbrott i v. cava caudalis hos nötkreatur. **[Hepatic and Epiphrenic Abscesses, with Rupture into the Caudal Vena Cava in Cattle].**—*Skand. VetTidskr.* **32.** 78–104. [English and German summaries].

Single or multiple abscesses in or around the liver are common in the ox and frequently cause no ill health. Fatal complications such as peritonitis or perforation into the hepatic veins or posterior vena cava have been recorded by German workers, but were regarded as unimportant. R., on the other hand, claims that perforation into the great veins is relatively common and is the second most important cause of sudden death in

the Stockholm area. Thus perforation was demonstrated in 13 of 18 animals in which hepatic abscesses occurred near the caudal vena cava, whilst 11 examples were encountered in the P.M. examination of 254 cattle. Of 80 cases of sudden death in cattle, 14 were due to this factor and only two to anthrax. O. discusses these 11 cases in detail, together with two others. The ox was usually found dead, but symptoms when observed were those of acute dyspnoea and cerebral disturbance. In a few cases there was a history of slight illness preceding the acute attack. In three animals the abscesses were found outside the liver (epiphrenic) and/or in association with the diaphragm and reticulum. The remainder showed single abscesses (five cases) and multiple lesions (five cases) in the liver proper. Except in the two instances where it was related to foreign body traumatism, the pathogenesis was obscure, but R. suggests that infection passes through the intact intestinal mucous membrane; he quotes experimental evidence in support of this. The abscesses were old-standing and thickly encapsulated, except at the site of perforation which was demonstrable macroscopically in the majority and associated with thrombus formation in the vein. More or less adhesion between the liver, diaphragm, reticulum, and lungs was found, and many other lesions in the thoracic or abdominal viscera were seen in the various cases.

The types of infection were as follows :—*Corynebacterium pyogenes* in four cases; streptococci in two cases; *Corynebact. pyogenes* and streptococci in two cases; *Corynebact. pyogenes*, streptococci, *Fusiformis necrophorus*, staphylococci, and *Bacterium coli* in three cases; *F. necrophorus* and streptococci in one case, and *F. necrophorus* alone in one case.—G. B. Brook.

*Benson, K. (1941). " Hjernebetaendelse " hos Køer og Parathyreoideahormon. **[Treatment of " Encephalitis " (Post-Puerperal Mania) in Cows with Parathyroid Hormone]**.—*Medlemsbl. danske Dyrlaegeforen.* p. 225. [Abst. from abst. in *Skand. VetTidskr.* **31.** 303–305].

B. refers to Harms' description of mania puerperalis and eclampsia puerperalis and maintains that they must be considered as manifestations of the same disease, *viz*, encephalitis.

In all 17 cows observed, symptoms appeared within 60 days of parturition; one the same day, six within three weeks, and seven during the fourth week, whilst in the remaining three cases symptoms were observed 30–60 days after parturition. All the cases were treated by means of mammary insufflation combined with simultaneous fresh air and cold water treatment, while a subcutaneous injection was made of 5 ml. of parathyroid extract containing 10 Collip Units per ml. Twelve of the animals treated were 3–5 years old, while the remainder were 6–10 years old. Nearly all recovered. Only three cases are described in detail, two of which recovered in less than seven hours. B. stresses the importance of immediate treatment, and recommends the same treatment for eclampsia in sows.

Piening, C. (1942). Zur Sterilität der weiblichen Schafe. **[Sterility in Ewes]**.—*Berl. Münch. tierärztl. Wschr.* Jan. 23rd. 23–25.

Of the five million ewes in Germany, 8–10% are infertile each year. P. examined three groups of sheep with the following results. The first group consisted of five ewe lambs about six months old and ten ewes aged 2–5 years, the latter having been killed for examination six months after lambing. The uteri were in all cases normal in appearance and free from bacteriological infection. The second group contained 60 adult ewes selected at random and killed when in oestrus. In 36 there was a glistening secretion in the cervical canal. The uteri of 51 were bacteria-free. The following bacteria were present in the uteri of the remainder :—*Salmonella abortus-ovis* (two cases), *Corynebacterium pyogenes* and enterococci (two cases), *Corynebact. pyogenes* and haemolytic streptococci (two cases), and *Bacterium coli* and *Clostridium welchii* (one case). In the case of eighty sterile ewes living in the same conditions as those of the first and second groups, 34% had metritis, the remainder being free from genital disease.

P. suggests that hormone therapy may increase the fertility rate in such ewes as he examined.—E. R. P.

Andreevskiĭ, V. Y. (1940). K izucheniyu orkhito-epididimitov u baranov. **[Orchitis and Epididymitis in Rams]**.—*Sovyet. Vet.* No. 10. pp. 38–41. [In Russian].

This condition causes considerable economic losses due to sterility in ewes and rejection of breeding rams. The incidence increases with the age of the animals. 4·8% of yearlings were found to be affected, 8·8% of 1½-year-olds, and 20% of animals over two years old. In eight large sheep-breeding farms, 680 (14%) of 4,887 adult rams were affected, 70% of which proved to be permanently sterile. The condition is mainly considered due to brucella infection, although the agglutination test, especially in chronically affected animals, is usually negative. Better results have recently been obtained using intradermal brucellysate tests.

A description is given of the clinical symptoms and P.M. changes in the testicles as well as of the microscopic appearance of the diseased spermatozoa. Three photographs of acute and chronic orchitis due to brucellosis are included.—A. Moldawsky.

Bonelli, P. (1939). Sopra una intossicazione delle pecore determinata da larve di *Margaridini* contenute negli steli di Graminacee. **[Poisoning of Sheep by Larvae of Margaridinae (Hemiptera, Coccidae) in Stems of Grasses in Eritrea]**.—*Boll. Soc. ital. Biol. sper.* **14.** 365–366.

B. describes a disease of sheep occurring in Eritrea. The symptoms, which are sudden in onset, comprise dyspnoea, muscular tremors, outstretched head and open mouth, dilated nostrils, pronounced mydriasis, extended and outspread limbs, abdominal distension, and prolapsed rectum. Autopsy revealed hyperaemia of the internal organs and mucosae, especially of the abomasum, and haemorrhagic infiltration of the endocardium.

The disease is apparently caused by the ingestion of spheroidal bodies found in the stems and roots of a common grass, *Cynodon dactylon*. These bodies vary from the size of a millet seed to that of a pea and are found singly or in groups. They are cyst-like and soft, of greyish-violet colour, and contain a pink fluid. During November a bright red larva leaves the cyst. Examples sent to the Institute of Entomology, University of Bologna were identified as insects of the order Hemiptera, family Coccidae, sub-family Margaridinae, two genera being involved. Further study is being made and B. will report on experimental work.—M. W.

*Butz, H., & Sonnenbrodt. (1940). Konstitutionsmängel und Erbfehler unserer Warmblutzuchten. **[Constitutional and Inherited Defects of Halfbred Horses in Germany]**.—*Dtsch. Warmblut.* **35.** 113–125. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 89].

This is chiefly an enumeration of the more common hereditary defects that must be borne in mind when horses are selected for breeding. Faulty conformation, stance or action, defective hooves, and anomalies of the joints are all classified as hereditary abnormalities. Of the more serious defects, cryptorchism, hernia, extensive abnormalities of the teeth, and flat feet are mentioned.

Monorchid horses are, by law, not admissible for breeding purposes. In the authors' opinion this law should also apply to animals with respiratory defects or periodic ophthalmia. Stallions of defective fertility also should not be used for breeding. The following lethal factors are discussed :– congenitally contracted tendons, atresia coli, torticollis, congenital blindness, polydactylia, and abrachia.—M. LANDAU.

BRANDLY, C. A., & WATERS, N. F. (1942). **Inheritance as a Factor in Poultry-Disease Research.**—*Amer. J. vet. Res.* **3.** 105–110.

A general discussion of the results that have been obtained in breeding animals and plants for genetic resistance to disease, and of the possibilities of genetic research in developing strains of fowls resistant to disease.—F. D. ASPLIN.

NUTRITIONAL AND METABOLIC DISORDERS

I. SCHÜTZLER, G. (1941). Tetanie bei Fohlenstuten. **[Tetany in Brood Mares].**—*Berl. Münch. tierärztl. Wschr.* July 25th. 362–363.

II. STUHLENMILLER, M. (1941). Tetanie bei einer Fohlenstute. **[Tetany in a Brood Mare].**—*Ibid.* Dec. 26th. 614–615.

I. After a review of cases of post-parturient tetany in brood mares described in German literature, an account is given of two cases.

II. A case is described of tetany in a mare which had foaled for the first time four weeks previously.

—ANN F. RUSSELL.

ROEPKE, M. H. (1942). **Physiologic and Metabolic Aspects of Acetonemia in Cattle.**—*J. Amer. vet. med. Ass.* **100.** 411–415.

R. suggests that large amounts of ketone bodies in the blood of animals showing ketosis should not be considered as toxic incomplete-oxidation products of fat metabolism, but rather as one of the normal means of utilization of fat for energy purposes when sufficient carbohydrates are not available. He suggests that testing for urinary ketones by the Ross or nitroprusside tests should be extended, and by suitable dilution of the urine an estimate of the ketone concentration be calculated. Thus it will be possible to distinguish between a mild or secondary and a severe or primary ketosis. When the blood ketone concentration is high and the blood sugar low, administration of liberal amounts of dextrose intravenously or orally is indicated.

—G. D. S.

HESS, W. C., & SULLIVAN, M. X. (1942). **Canine Cystinuria. The Effect of Feeding Cystine, Cysteine, and Methionine at Different Dietary Protein Levels.**—*J. biol. Chem.* **143.** 545–550.

Metabolic studies were carried out on two of the cystinuric Irish terrier dogs (all cases are males) bred by BRAND and his collaborators [see *V. B.* **10.** 948]. The urinary cystine excretion rose as the dietary protein was increased, while the nitrogen excretion rose also, and in a more strict ratio to the amount of protein fed. At the lower levels (5% and 10% of protein) intake, administration of methionine and cysteine hydrochloride led to marked increases in cystine excretion. The findings in general were in close accord with those reported in human cases.—ALASTAIR N. WORDEN.

SCHELLHASE. (1942). Beitrag zur Rachitis der Schweine und Schafe. **[Rickets in Pigs and Sheep].**—*Berl. Münch. tierärztl. Wschr.* April 17th. 122–123.

It is considered that the problem of rickets in pigs and sheep can be readily solved by the use of vigantol in conjunction with a mineral mixture "calvisal". A high percentage of young pigs was found to have rickets, and this was attributed to the depleted winter rations since the outbreak of war. Almost all animals showed some stiffness in the spring. Lambs were also often affected but rickets in calves was rare.—A. M. COPPING.

CHANNON, H. J., HANSON, S. W. F., & LOIZIDES, P. A. (1942). **The Effect of Variations of Diet Fat on Dietary Fatty Livers in Rats.**—*Biochem. J.* **36.** 214–220.

The influence of dietary fat on the extent of fat infiltration in the liver has been further investigated with the object of assessing whether choline is concerned with the desaturating of fatty acids in the liver. When the effects of liquid unsaturated, solid unsaturated, and solid saturated acids were compared it was found that on diets high in fat and low in choline, the extent of fatty infiltration into the liver is related to the proportion of C_{14}–C_{18} saturated fatty acids in the diet. Solid unsaturated acids had no effect. Elaidic acid is treated normally in the body, appearing in liver, carcass and faecal fat in amounts proportional to the amount in the diet.—G. D. S.

DIXON, J. K., & KIDSON, E. B. (1941). **The Effect of a Heavy Dressing of a Southland Limestone on the Health of Lambs at Morton Mains.**—*N.Z. J. Sci. Tech.* **23.** 47a–50a.

Pasture on which symptoms of Southland lamb sickness occurred was top-dressed with a limestone containing naturally about 2 oz. cobalt sulphate per 3 tons and compared with similar pasture top-dressed with different quantities of cobalt sulphate. The live weights and health of the lambs (both weaned and unweaned) on the pasture treated with 3 tons of the limestone per acre were equal to those obtained with 2 oz. and 4 oz. cobalt sulphate per acre respectively. Lambs on control untreated pasture developed typical symptoms of Southland lamb sickness.

Analyses showed that the Co content of the pasture treated with limestone was increased to the same level as that produced by top-dressing with both 2 and 4 oz. $CoSO_4$ per acre, but that the time required for this increase was much longer. The increase due to the $CoSO_4$ dressings did not persist longer than one month, and after five months the Co content of all the treated pastures was slightly lower than that found before top-dressing. The average Co content of the livers of three lambs from each of the experimental pastures was 0·019 p.p.m. for those on the control untreated pasture, 0·025 p.p.m. for those on the limestone pasture and 0·055 and 0·054 p.p.m. respectively for those on the pastures treated with 2 and 4 oz. $CoSO_4$.

It is concluded that top-dressing with limestone on Morton Mains pastures is beneficial, and on this soil there is no indication of a drop in availability of soil Co as a result of the use of 3 tons of ground limestone per acre.—R. ALLCROFT.

NATVIG, H. (1941). Die Bedeutung der Vitamine für die Resistenz des Organismus gegen bakterielle Infektionen. **[Importance of Vitamins in Resistance to Bacterial Infection].**—*Skr. norske VidenskAkad. I. Mat.-Naturv. Klasse.* No. 2. pp. 266. [In German].

This account of three years' work on the relation of the vitamins to resistance to infection in the animal organism is presented very fully, each section containing an historical introduction, an account of experimental

work and a discussion of results in the light of previous findings. In the opening section the conditions of housing, feeding, and care of the animals are described. Pure crystalline vitamins were given as supplements to basal diets lacking the specific vitamin under test. The study includes observations on the effect of deficiency of vitamins A, B complex, and D in rats, and of vitamin C in g. pigs, on susceptibility to acute and chronic infections. The Ratin bacillus [*Salmonella enteritidis* var. *danysz*] and *Leptospira icterohaemorrhagiae* were the infecting organisms in studies of acute infections, and deficiency of any of the vitamins produced definite lowering of resistance in the deprived animals as compared with normally fed rats and g. pigs. The effect of vitamin C deficiency on chronic TB. in g. pigs was deleterious, but the role of vitamin C under these conditions was not clarified. In contrast with the observations of some other workers, no evidence was obtained for the reduction of complement titre in animals deprived of vitamins A, B, C, or D. The bactericidal power of whole blood or of serum for dysentery bacilli or for *Staphylococcus aureus* was not apparently lowered by deprivation of any of the vitamins or by hypervitaminosis D. The phagocytic index of defibrinated blood or of citrated blood from deprived rats or g. pigs showed no greater variations than those found in normal animals, and the agglutinin production was not affected by vitamin deficiency.

Thus, although the fact was again established that increased susceptibility to infection accompanied vitamin deficiency, studies by the most up-to-date methods failed to demonstrate the mechanism by which the resistance of the organism was lowered.

A useful and extensive bibliography completes the treatise.—A. M. Copping.

Chauchard, B., Mazoué, H., & Chauchard, P. (1942). L'action pharmacodynamique des vitamines dans les troubles nerveux avitaminosiques. Possibilité d'effets correcteurs non spécifiques. **[Pharmacological Action of Vitamins in Nervous Disorders Produced by Vitamin Deficiency]**.—*C. R. Soc. Biol. Paris.* **186.** 182–184.

The abnormal chronaxia of rats in a state of vitamin B_1 or A deficiency is temporarily restored by nonspecific vitamin therapy. The authors therefore conclude that therapeutic criteria are inadequate as a proof of the nature of the vitamin deficient in a disease.—J. G. C.

Maggi, G. (1941). Ricerche preliminari sull'azione di alte dosi di vitamina A nella T.B.C. sperimentale delle cavie. **[Effect of High Doses of Vitamin A on TB. in G. Pigs]**.—*Boll. Soc. ital. Biol. sper.* **16.** 686–688.

Ten g. pigs were artificially infected with tuberculous material. After 20 days all the animals showed a local reaction and the regional lymph nodes were enlarged.

Four of the g. pigs were given injections of vitamin A (24,000–96,000 I.U.) every four days from the date of infection. One g. pig of this group died of miliary TB. after a month. Another died of pneumonia after three months. The other two were still alive and apparently healthy after six months.

Another group of four g. pigs received vitamin A *per os*. Of this group, one died of tuberculous pneumonia after three months. The remaining three were still alive after six months and their weight was increasing.

Two control animals which received no vitamin A treatment died of generalized TB., one in a month, the other after four months.—Miller Watson.

*Jonsson, G., Obel, A. L., & Sjöberg, K. (1941). **[Scurvy as a Secondary to Avitaminosis A]**.—*Svensk VetTidskr.* **46.** 209–216. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 148].

In rats deprived of vitamin A, changes were observed in the teeth and muscles which resembled those found in vitamin C deficiency. The vitamin C content of the blood serum was very low in animals deprived of vitamin A and the values were not raised by increasing the vitamin C content of the diet.

—A. M. Copping.

Cazzola, D. (1941). Sulla presenza di acido piruvico nel testicolo di ratto durante l'avitaminosi B_1. **[Presence of Pyruvic Acid in the Testicles of Rats with Avitaminosis B_1]**.—*Boll. Soc. ital. Biol. sper.* **16.** 710–712.

C. studied the pyruvic acid content of the testicles of rats with avitaminosis B_1. In normal rats he found the average amount of pyruvic acid in testicular tissue to be 0·36 mg. per 100 g. of tissue. Rats on a vitamin B_1 free diet were examined ten days after the commencement of the diet and the pyruvic acid content of the testicular tissue was found to average 0·69 mg. per 100 g. of tissue. After 15 days it rose to 0·79 mg. and after 20 days to 1·12 mg. per 100 g. of tissue.—M. W.

Fornaroli, P. (1941). Sul comportamento dell'acido piruvico nel tessuto muscolare in attività negli animali in avitaminosi B_1. **[Behaviour of Pyruvic Acid in Muscular Tissue of Animals with Avitaminosis B_1]**.—*Boll. Soc. ital. Biol. sper.* **16.** 712–714.

F. studied the pyruvic acid content of the muscles of normal rats and rats with avitaminosis B_1. No significant increase was noted in the muscles of the latter after forced exercise when compared with normal rats after similar exercise. It is concluded that the high pyruvic acid content of muscle in avitaminosis B_1 does not increase proportionately with increased sugar metabolism in muscular activity.—Miller Watson.

I. Holmes, A. D., & Pigott, M. G. (1941). **The Effect of Thiamin Hydrochloride on the Muscular Dystrophy of Avitaminosis-E.**—*Amer. J. Physiol.* **132.** 211–214.

II. Terry, R. (1941). **Ineffectiveness of Thiamin Hydrochloride in Treating Late Weaning Paralysis of Vitamin E Deficient Rats.**—*Proc. Soc. exp. Biol., N.Y.* **48.** 34–37.

I. Evidence is presented indicating that administration of massive doses of vitamin B_1 to paralysed unweaned rats born of mothers deficient in vitamin E, can cure the muscular symptoms. The response of the individual rat to a definite dose varied according to the severity of the muscular dystrophy.

II. Using ten litters of paralysed rats from mothers deficient in vitamin E, T. was unable to confirm the results obtained in I, although even larger doses of B_1 were administered.—A. M. Copping.

Romanoff, A. L., & Bauernfeind, J. C. (1942). **Influence of Riboflavin-Deficiency in Eggs on Embryonic Development (Gallus Domesticus).**—*Anat. Rec.* **82.** 11–23.

Observations on 1,268 eggs from riboflavin-deficient hens showed that the average embryonic mortality of all fertile riboflavin-deficient eggs was 87·5%. Three critical periods of embryonic mortality were observed, at the fourth, 14th and 21st days of incubation. With the increase of depletion of the riboflavin reserves of individual hens, the major peak of embryonic mortality was progressively shifted from the later to the earlier critical period. The appearance and lesions of the embryos at the three critical periods of death are described.—R. Allcroft.

GIROUD, A., RATSIMAMANGA, A.-R., & CHALOPIN, H. (1942). Existe-t-il des réserves en acide ascorbique ? **[Question of Existence of Vitamin C Reserves in the Body].**—*C. R. Soc. Biol. Paris.* **136.** 208–210.

G. pigs which had been maintained at a high intake of ascorbic acid lived longer, and showed scorbutic symptoms later, than those maintained previously on a lesser amount of ascorbic acid.—J. G. CARR.

UNGAR, G. (1942). **Effect of Ascorbic Acid on the Survival of Traumatized Animals. [Correspondence].** —*Nature, Lond.* **149.** 637–638.

Trauma was produced in g. pigs by means of a weight falling from different heights and the degree of trauma was expressed in terms of the energy by which it was produced and the degree of shock by the mortality rate in groups of animals traumatized to different degrees. It was found that the amount of energy is related both to the degree of tissue damage and to the mortality rate. A series of experiments was carried out to test the effect of ascorbic acid on the survival of g. pigs injured by a falling weight. It was found that animals subjected to the minimum degree of traumatization which otherwise would have caused 100% mortality, always survived after the subcutaneous injection of over 100 mg. per kg. body weight of ascorbic acid. The beneficial effect of this treatment became increasingly less if the treatment was delayed after traumatization. The effect of vitamin B_1 in doses of 5–15 mg. per kg. body weight was also tested, but it was found to be less effective than ascorbic acid. The g. pigs used were on the same diet, but as no ascorbic acid determinations were made, some of the animals may have been deficient in this factor. Similar results were obtained with rats, which manufacture their own ascorbic acid, and U. suggests that the beneficial effect of this substance after trauma may be due to some other pharmacological property which it possesses.—G. D. S.

TEPPER, A. E., & BIRD, H. R. (1942). **Gizzard Lesions in Day-Old Chicks. I. Their Relationship to Subsequent Growth and Mortality and Their Prevalence. II. The Time of Origin and Factors Influencing the Cause of Gizzard Lesions in Chicks. III. Can Severity of Incidence be Reduced by Dietary Control ?**—*Poult. Sci.* **21.** 47–51, 52–57 and 108–110.

I. Chicks from hatcheries with a high incidence of gizzard erosion grew as well and utilized their food as efficiently as those from hatcheries with a lower incidence of gizzard lesions. Under a system of good management and feeding the growth and livability of chicks with gizzard lesions is normal. In a survey of 87 lots involving 1,737 day-old chicks, 74% were found affected with gizzard lesions.

II. Eggs containing living chick embryos were examined on each day following the 14th day of incubation until hatching, in order to determine the time of development of gizzard erosion lesions. Haemorrhagic spots were first seen in the gizzards of 20-day embryos. The authors put forward the theory that there may be an increase in blood pressure caused by the drawing of the yolk sac into the body cavity, the beginning of pulmonary respiration, and the cessation of extra-embryonic circulation, and that this increase in blood pressure may be in excess of the resisting power of the gizzard capillaries.

Some experimental evidence is presented which indicates that this may be so and that the three factors enumerated are cumulative in their effect.

III. It was found possible to produce newly hatched chicks with severe gizzard erosion lesions by control of the hen's diet. Similarly a breeder diet could be compounded which resulted in the production of chicks with relatively mild gizzard lesions.—F. D. A.

PHYSIOLOGY

GONZAGA, A. C. (1940). **A Contribution to the Chemical Study of the Blood of Philippine Carabaos.** —*Philipp. J. Sci.* **71.** 317–320.

The composition of the blood of 14 male and six female water buffaloes was determined. The results were similar to those obtained for cattle and were in general agreement with previously published values except in the case of serum Ca and blood sugar. The average serum Ca value was 10·05 mg.% and the blood sugar 44 mg.%. Previous data give an average of 28·19 mg.% for serum Ca and of 73·65 mg.% for blood sugar. G. suggests that the lower blood sugar found may be due to the use of Folin's method which reduces to a minimum the amount of reducing non-sugars included in the estimation. No explanation is given for the much lower value found for serum Ca compared with that reported by a previous worker [POSA, E. G. (1935). *Philipp. Agric.* **24.** 388].—G. D. S.

SINGER, E. (1941). **Studies on the Hormonal Antigens of the Anterior Pituitary Gland.**—*Aust. J. exp. Biol. med. Sci.* **19.** 125–132.

Sera from rabbits injected with various protein fractions prepared from the anterior lobe of the pituitary were tested by the complement-fixation method and the results confirmed that many of the fractions have specific antigens closely related to their hormonal actions. It is also shown that the different hormone fractions have some antigenic component in common which is more marked in some instances, *e.g.* the thyrotropic hormone has the same antigen as the follicle-stimulating hormone in addition to having an antigen of its own. The influences of some carbohydrate and lipoid components of the pituitary were also investigated ; antigens similar to Forssmann antigen and "A" substance do occur in pituitary fractions but in no way are they related to the fractions containing the true hormones. The same antigens were shown to be present when the rabbits were injected with analogous fractions prepared from bovine kidney by the same procedures as were used to obtain the anterior pituitary extracts. The fact that fractions prepared from the anterior pituitary and kidney have similar antigenic properties but that the kidney does not produce hormonal effects is considered to indicate that the structural differences must be very slight.—C. R. AUSTIN.

FOLLEY, S. J., WATSON, H. M. S., & BOTTOMLEY, A. C. (1941). **Studies on Experimental Teat and Mammary Development and Lactation in the Goat.**—*J. Dairy Res.* **12.** 241–264.

The experiments recorded in this paper show that in the virgin goat continued application of 1·0 g. of 1% diethylstilboestrol ointment to the skin surrounding the base of the teats results, after a latent period during which growth of the udder and teats occurs, in the induction of prolonged artificial lactation periods during which considerable amounts of milk are produced. Lactation increased in intensity and continued at a high level while oestrogen administration continued. These findings appear to be quite at variance with the established inhibitory action of oestrogens on lactation, but the authors point out that experiments on lactating cows have shown that lower levels of oestrogen than are

necessary for terminating lactation exert not an inhibitory, but, on the contrary, a galactopoietic effect which is principally manifested by an increase in the solids content of the milk. It is thought that low doses of oestrogen exert their galactopoietic effect through the anterior pituitary. During the first part of the artificial lactation period, the composition of the milk was similar to that characteristic of the colostral period; subsequently, milk of normal quality was secreted. Administration of oestrogens to normal or castrated immature male goats caused a slight increase in the rate of teat growth, but did not result in udder growth or milk secretion.—N. J. SCORGIE.

BARNES, J. (1942). **Inhibition of Lactation by Synthetic Oestrogenic Substances with special reference to Dienoestrol.**—*Brit. med. J.* May 16th. 601–604.

Inhibition of lactation in the human subject was successfully achieved in a fairly large series of cases by the administration *per os* of the synthetic oestrogens stilboestrol, dienoestrol, and hexoestrol. Inhibition was easier when treatment was begun within one day of delivery than when it was started later; it was also more successful in patients in whom pregnancy had advanced beyond 32 weeks, pregnancies terminating at between 20 and 28 weeks being especially difficult to treat. In the dosage employed, stilboestrol was more effective than hexoestrol. It is concluded that synthetic oestrogens are valuable for the inhibition of lactation in the human subject.—N. J. SCORGIE.

SØRENSEN, E. (1942). **The Dehydrogenization Power of Sperm Cells as a Measure for the Fertility of Sperm.**—*Skand. VetTidskr.* **32.** 358–373. [In English].

A method is described for determining the number of living spermatozoa in a sample of semen by decolorization of a standard quantity of methylene blue. The method is based on the technique for determining the dehydrogenization power of living cells worked out by THUNBERG (1936), but S. has simplified the test so that it can be carried out without elaborate apparatus. Data indicate that a semen sample which decolorizes methylene blue in 10 min. contains 500,000–600,000 living spermatozoa per cu. mm. With a decolorizing time of 15–20 min. the sample contains 300,000–400,000 living sperms, and of 25–30 min., 100,000–200,000 living sperms.—N. J. SCORGIE.

DUKE OF BEDFORD, & MARSHALL, F. H. A. (1942). **On the Incidence of the Breeding Season in Mammals after Transference to a New Latitude.**—*Proc. roy. Soc.* Ser. B. **130.** 396–399.

Observations made in South Africa have shown that ferrets, like other mammals with fixed breeding seasons in temperate latitudes, when transported to the southern hemisphere reverse their breeding seasons so as to conform to the new environmental conditions. Ferrets taken to tropical latitudes where daylight duration is comparatively uniform throughout the year, experience sexual activity either at their former seasons or else come on heat irregularly. Observations carried out in England on deer and other ruminants imported from tropical regions showed that these species did not respond to the seasonal influence of daylight duration in the manner of British native species, but tended to maintain their internal sexual rhythm. The probable explanation of this lies in the fact that, owing to the comparative uniformity of conditions in the tropics, tropical species have never acquired a capacity to respond to variations in light duration or intensity in the manner characteristic of so many animals living under the seasonally changing conditions of non-tropical regions.—N. J. SCORGIE.

STOSS, A. O. (1941). Anatomische und klinische Grundlagen für die Feststellung der Trächtigkeit bei Stuten. **[Anatomical and Clinical Basis for Determining Pregnancy in Mares].**—*Z. Veterinärk.* **53.** 130–133.

The subject is discussed for the benefit of general practitioners, and a detailed account of the technique of rectal and vaginal palpation of the ovaries and uterus is given.

LISCO, H. (1942). **Russell Bodies Occurring in the Lymph Follicles of the Intestinal Tract of Pigs.**—*Anat. Rec.* **82.** 59–66.

Russell bodies (eosinophilic bodies) were demonstrated in the intestines of ten out of 22 pigs examined. They occurred chiefly in the solitary lymph follicles, but were also observed in cells in the stroma of the intestinal tract. They varied in number from one or two up to 40 or more per follicle, and were most frequently observed in the ileum although they were also found in the stomach, jejunum, and colon. Russell bodies have been observed in inflammatory lesions in human beings, but there was no correlation between their occurrence and the presence of inflammatory lesions in the animals studied.—R. ALLCROFT.

LANZ, A. (1941). Wägungen und Messungen an der Pferdeleber. **[Weights and Measurements of Horse Livers].**—*Arch. wiss. prakt. Tierheilk.* **76.** 248–255.

The following are the details of the weights and sizes of the livers of 32 horses, recorded according to methods laid down, the figures in brackets referring to the percentage weight in relation to the body weight. The average weights were:—in five still-born foals 1,146 g. (3·43%); in four foals, six weeks to five months old, 1,601 g. (2·20%); in horses of 2–8 years old, 5,320–9,500 g. (1·52%); in six horses, 9–13 years old, 6,170 g. (1·13%); in animals of 14–18 years of age, it was 1·28% of the body weight, and in horses of 20 years and over, 1·32% of the body weight. Measurements are given for each of these categories. The maximum absolute weight of the liver was found in horses of 2–8 years old; in animals up to 18 years old the liver had a smaller but almost steady weight which decreased rapidly in older horses. A definite correlation seems, therefore, to exist between body- and liver-weights. A general observation is made that in horses up to eight years the right lobe is larger and in older animals, the left lobe.—E. R. PARISER.

MARTINO, L. (1941). Osservazioni sull'innervazione della polpa dentaria. **[Innervation of Dental Pulp].**—*Boll. Soc. ital. Biol. sper.* **16.** 681–683.

M. used silver-impregnated sections of the bovine tooth for his studies.

He describes the nerve supply of the pulp in detail, making special reference to Raschkow's plexus which he found only in the crown and neck in the sub-odontoblastic pulp. In the fang the plexus is absent, its place being taken by very fine, straight, and parallel fibres. Throughout the pulp M. found considerable anastomosis even of grey fibres with white fibres. Only at the apex of the crown did he find many fibres penetrating the layer of odontoblasts.—MILLER WATSON.

BAKER, F. (1942). **Microbial Synthesis and Autolysis in the Digestive Tract of Herbivora. [Correspondence].**—*Nature, Lond.* **149.** 582–583.

A review is presented of the present knowledge of iodophile microflora in the rumen of the ruminant and the caecum of the non-ruminant herbivora. An experiment was conducted to test the hypothesis that bacterial autolysis may play an important part in their

removal. The caecal contents of a g. pig were removed and a portion suspended in 10% formalin and the remaining portion diluted with saline saturated with chloroform and divided into two portions. One was heated to 100°C. for 2 min.; both were incubated at 37°C. for 12 hours. The formolized control showed an abundant disintegration of starch grains which were entirely surrounded by iodophile micro-organisms. In the boiled fraction the iodophile micro-organisms were unchanged, but in the unboiled fraction they had entirely disappeared. These changes were attributed to autolysis. Similar results were obtained in parallel experiments performed with the rumen contents of cattle.—G. D. S.

POISONS AND POISONING

ADAMS, S. H., DAVIES, R. O., & ASHTON, W. M. (1942). **Phosphorus Poisoning.**—*Agriculture.* **49.** 61–62.

Herbage and soil were contaminated by yellow phosphorus following the use of self-igniting phosphorus bombs, and two bullocks died five days afterwards. No phosphorus could be demonstrated in the stomach contents. The herbage in the vicinity of the bomb-burst was found to contain 0·002% of P; 14 days after the incident, the herbage within a radius of 5 yards still contained P, but at 10 yards the herbage was unaffected. A sample of herbage taken in the immediate vicinity of the area four weeks after the bombing practice was free from P, but soil scrapings were found to contain 0·004% of P. Five months later, the soil still contained elementary P and this persistence may have been due to a coating of oil which will protect the P from oxidation. There are indications that P may possess an attraction for sheep and the authors suggest that it is prudent to exclude these and other animals from areas where incendiary bombs have been used and to remove the top few inches of soil from scorched areas likely to have been contaminated with P.—G. D. S.

RADKEVICH, P. E. (1941). Funktsional'nye izmeneniya serdechno-sosudistoĭ sistemy u loshadeĭ, otravlennykh difosgenom, i pokazanie k primeneniyu kofeina i kamfory. **[Changes in the Cardio-Vascular System of Horses Poisoned with Diphosgene and Treatment by Caffein and Camphor].**—*Veterinariya, Moscow.* No. 1. pp. 105–119. [French summary].

The cardio-vascular activity was recorded by a pulsograph connected with the exposed carotid artery and the respiration movements were observed by means of a pneumograph. Exposure to diphosgene for 15 min. at a concentration of 0·2–1·2 mg. per litre of air affected the cardiovascular system at once. This was manifested by a short period of bradycardia often accompanied by lowering of the blood pressure. During the process the bradycardia became replaced by tachycardia. Premature contractions (extrasystoles), dicrotic pulse, and other heart phenomena were also registered.

The observed cardiovascular disturbances were, in R.'s opinion, of a functional character and were probably due to the action of the nerves, as the vasomotor and respiratory centres became involved.

Camphor and caffein used 2–3 hours after the exposure were ineffective, and increased the cardiac disturbances.—A. MOLDAWSKY.

MESHKOV, N. V. (1941). Toksichnost' rastvorov mysh'yakovistokislogo natra dlya krupnogo rogatogo skota i ovets. **[Toxicity of Sodium Arsenite for Cattle and Sheep].**—*Veterinariya, Moscow.* No. 3. pp. 125–129. [French summary].

Frequent dipping of sheep in sodium arsenite solutions containing 0·16% As_2O_3 and washing of cattle with solutions containing 0·18–0·20% As_2O_3 have no harmful effect on the animal. M. attributes poisoning of unshorn sheep, dipped in arsenical solutions, to slow evaporation permitting increased resorption of As through the skin. When sheep were dipped two or three times with an interval of six days between each dip (0·24% As_2O_3), the blood Hb was lowered and the number of erythrocytes decreased. When cattle were washed three times (interval 5–6 days) with sodium arsenite solutions containing 0·24% As_2O_3, symptoms of slight poisoning appeared, *viz*, diarrhoea, fall of Hb, excoriation of the skin, etc.—E. R. PARISER.

OLSON, O. E., & MOXON, A. L. (1942). **Nitrate Reduction in Relation to Oat Hay Poisoning.**—*J. Amer. vet. med. Ass.* **100.** 403–406.

Red root [*Gyrotheca capitata*—a haemodoraceous plant of southern U.S.A.] and oat hay contain large amounts of potassium nitrate, and when the material is wet and the temperature suitable, reduction of the nitrate to nitrite occurs. Several reports of poisoning in animals due to the ingestion of oat hay have been reported, the animals dying from methaemoglobinaemia. It has been suggested that the reduction of the nitrate to nitrite occurs in the gastro-intestinal tract. Cattle seem to be most susceptible to this form of poisoning, due to the pH of the rumen. The most rapid reduction occurs at about 40°C. and at pH 7–8. It is believed that the agent of reduction in the rumen is *Bacillus subtilis.*—G. D. S.

KUSCHER, A. (1940). Blausäurevergiftung bei Hühnern. **[Hydrocyanic Acid Poisoning of Fowls].**—*Wien. tierärztl. Mschr.* **27.** 518–520.

Some of a group of fowls fed with kernels of apricots died with symptoms of a severe dyspnoea. The contents of crop and stomach had the characteristic smell of bitter almonds. Stomach, intestines, and liver contained HCN.—H. BLASCHKO.

HEUSER, G. F., & SCHUMACHER, A. E. (1942). **The Feeding of Corn Cockle to Chickens.**—*Poult. Sci.* **21.** 86–93.

The presence of a yellow cheesy material in the mouth extending into the palatal cleft and back into the larynx appears to be a characteristic of corn cockle poisoning in chickens. Affected birds become emaciated and they present a generally listless unkempt appearance with rough feathering and diarrhoea.

Ground corn cockle fed at a level of 0·25% of the mash resulted in the production of mouth lesions, but did not affect the growth rate when fed to chickens up to the age of six weeks.

Chickens of 6–10 weeks were less susceptible than baby chicks to the toxic effects of corn cockle and developed a tolerance to it. The feeding of unground corn cockle to both young and older chicks had no apparent effect. Corn cockle is not very palatable and there appears to be no danger from the presence of corn-cockle seed in wheat. Ground corn cockle present in wheat byproducts may be dangerous.—F. D. ASPLIN.

KOVÁCS, E. (1942). Toxikologische Untersuchungen mit weissem Steinklee. **[Toxicological Studies on White Clover].**—*Dtsch. tierärztl. Wschr.* **50.** 261–264.

This is a German version of an article which originally appeared in Hungarian [see *V. B.* **12.** 354].

I. PECK, E. F. (1942). **Castor Seed Poisoning in a Camel. A Note on Gastric Lavage.**—*Vet. Rec.* **54.** 184.

II. LEESE, A. S. (1942). **Castor Seed Poisoning or**

"Coldstruck Paralysis" in the Camel? [Correspondence].—*Ibid.* 246.

I. Symptoms of castorseed poisoning in a camel are described; there was hyperaesthesia, blinking of the eyes, and twitching of the skin over the face; the gait was incoordinated, and the mouth was held agape. Treatment consisted in a compound hypodermic injection of arecoline ½ grain, physostigmine ½ grain, and strychnine ¼ grain; this dosage was repeated twice more at intervals of 15 min. but without the slightest effect. The camel was then cast and a stomach tube passed *per os*; water poured down the tube into the rumen caused the regurgitation of three castor seeds and other ingesta. Finally ½ oz. of potassium permanganate in a gallon of water was administered. The animal immediately showed improvement and made a complete recovery.

II. A letter in which P.'s diagnosis in the case reported above is questioned. L. suggests that the symptoms conform to those of a disease of doubtful aetiology which has been termed "coldstruck paralysis", and thinks that P.'s hypodermic injections of arecoline, physostigmine, and strychnine may have been the main factor in causing recovery of the camel.—N. J. Scorgie.

THERAPEUTICS

Berthelot, A., Nègre, L., & Bretey, J. (1941). Inhibition par le succinate d'éthyle de l'action aggravante de l'huile d'olive sur la tuberculose du cobaye. **[The Inhibition by Ethyl Succinate of the Aggravating Action of Olive Oil on Tuberculosis of G. Pigs].**—*C. R. Acad. Sci., Paris.* **213.** 90–91.

In experiments involving 107 g. pigs infected with bovine or human tubercle bacilli, repeated subcutaneous injections twice weekly of 1 ml. olive oil alone or 0·5 ml. ethyl succinate alone aggravated the severity of the infection, but injection of a mixture of the two substances in the same proportions not only failed to result in the aggravation of the disease, but produced a diminution in the lesions as compared with those of the control animals. The authors claim that their hypothesis is confirmed that acidosis influences the aggravation of tuberculous lesions.—J. P. Gardner.

Scales, F. M., & Kemp, M. (1941). **A New Group of Sterilising Agents for the Food Industries and a Treatment for Chronic Mastitis.**—*Ass. Bull., internat. Ass. Milk. Dlrs.* **33.** 491–520.

The authors have continued their work on the use of some commercial wetting agents as disinfectants. These wetting agents are commercially available synthetic organic detergents, which have the advantage over chlorine of being stable and of not being corrosive. A chlorine solution on a greasy surface remains in droplets while a wetting agent will spread evenly over the surface in a film.

Considerable details are given of various tests for disinfectant properties of these substances, the results of which may be summarized in the following way. The germicidal properties of the wetting agents are most pronounced when the pH of the solution is in the lower acid range. Many of the wetting agents when adjusted to a pH of 4·0 are better disinfectants than alkaline sodium hypochlorite. For general industrial use a concentration of the wetting agent of 0·03–0·05% at pH 4·0 is recommended. The use of gluconic or phosphoric acid for the adjustment of pH is recommended as their corrosive effect is less than that of other acids. Procedures for sterilizing dairy utensils and cleansing the cow's udder before milking are given. The treatment of chronic mastitis is also discussed. An extensive list of the commercial wetting agents tested is given. "Zephiran" was the agent used for the treatment of mastitis and the sterilization of dairy equipment. [The recommendation of this agent for the treatment of mastitis appears to be based entirely on the results of *in vitro* tests and no details of clinical trials are given, if any were performed.]—D. L. Hughes.

Brown, R. L. (1942). **Silver Picrate in the Treatment of Granular Vaginitis in Cattle.**—*N. Amer. Vet.* **23.** 247–249.

The serious repercussions of granular vaginitis on breeding are stressed. Intra-vaginal insufflation of 1% silver picrate dispersed in kaolin was found to be more satisfactory than other forms of treatment. In bulls infected with this disease a rest period from service of 2–4 months or longer will apparently effect a cure.—N. J. Scorgie.

Anderson, L. G., & Bugg, R. R. (1942). **Observations on the Use of Stilboestrol Dipropionate.**—*Vet. Rec.* **54.** 249.

A series of case records dealing with the use of stilboestrol dipropionate in cattle. Six anoestrous heifers each given 15 mg. stilboestrol all came into oestrus and accepted the bull within 48 hours of the injection. None conceived and five of the six again went into the anoestrous state. A case of mummified foetus was treated with numerous injections of stilboestrol, the last three doses being 50 mg., 75 mg., and 100 mg.; the foetus was not expelled. Two cases of pyometra treated with stilboestrol showed no improvement; a third case probably responded. Two cows which required assistance at parturition and in which retention of the foetal membranes was anticipated, were each given 20 mg. of stilboestrol; this had no effect on the expulsion of the membranes which had to be removed manually.—N. J. Scorgie.

Schultz, E. W., & Gebhardt, L. P. (1942). **Studies on Chemical Prophylaxis of Experimental Poliomyelitis.**—*J. infect. Dis.* **70.** 7–50.

This is a report dealing with the resistance which may be induced in monkeys against intranasal infection with poliomyelitis virus, by the application of certain chemical agents to the olfactory mucosa. 1% zinc sulphate solution was found to provoke a marked and fairly lasting resistance after only one application. The mechanism underlying the prophylactic effect was studied, and the onset and duration of the resistant state were investigated. The mechanism underlying the prophylactic effect was in all instances related to damage of the tissues locally by the agent used. Those most protective were the most damaging to the tissues. The practical value of this chemical prophylaxis lies mainly in the possibility of inhibiting infection by the olfactory route, during studies of other potential routes of infection.—I. W. Burton.

Kovalevskiĭ, M. F. (1941). Izyskanie terapevticheskikh sredstv protiv infektsionnoĭ anemii loshadeĭ. **[Therapeutic Treatment of Equine Infectious Anaemia].**—*Veterinariya, Moscow.* No. 1. pp. 18–20. [French summary].

Considerable improvement in the general condition was achieved in three naturally infected horses and two experimentally infected foals which were given combined treatment with chinosol followed by prolonged oral administration of hepatocrin.

Chinosol alone, or Lugol's solution of iodine or "mansier" solutions were ineffective.—A. Moldawsky.

REMIEN. (1942). Bluttransfusionen zur Behandlung der parasitären Anaemie sowie der traumatischen Anaemie der Pferde. **[Treatment of Parasitic and Traumatic Anaemia in Horses by Blood Transfusion].** —*Tierärztl. Rdsch.* **48.** 91–95.

In winter and early spring, many cases of parasitic anaemia are found in horses, which sometimes do not respond to treatment for removal of the parasites. Twelve such cases were treated by blood transfusion, using the apparatus described by KOCH [*V. B.* **9.** 586.], with excellent results in eleven cases. Digitalis was given before transfusion to maintain the heart.—J. G. C.

KIENAST. (1942). Paresolyt Asid bei Myoglobinurie der Pferde und bei Lebensschwäche der Fohlen. **[Treatment of Equine Myoglobinuria and Inanition in Foals with Paresolyt].**—*Dtsch. tierärztl. Wschr.* **50.** 188.

Paresolyt is a solution of 40 g. $CaCl_2$ and 1·5 g. $MgCl_2$ in 750 ml. water. Intravenous injection is stated to have been successfully used in myoglobinuria, even in most severe cases. It has also been useful in cases of inanition of foals.—H. BLASCHKO.

LYNCH, H. M., & LOCKWOOD, J. S. (1941). **Studies on the Mechanism of the Action of Sulfanilamide. V. On the Dissociation of the Phenomena of Growth-stimulation and Sulfanilamide-inhibition of Hemolytic Streptococci.**—*J. Immunol.* **42.** 435–443.

Population studies were made on haemolytic streptococci growing in human serum to which were added various growth-stimulating substances with or without sulphanilamide. It was found that neopeptone and streptococcal extract antagonize sulphanilamide as well as stimulate growth, while acid-hydrolysed neopeptone and staphylococcal extract only stimulate growth. It is concluded that growth stimulation and sulphanilamide inhibition are dissociated phenomena.—D. G. D.

ALSTRÖM, I. (1942). Dosering av sulfonamidpreparat hos större husdjur. **[Dosage of Sulphonamides for Large Domestic Animals].**—*Skand. VetTidskr.* **32.** 105–117. [English summary].

After reviewing the well known facts about sulphonamide pharmacology, A. gives advice about treatment of domestic animals with drugs of this group.

In the horse, sulphanilamide is best given as a solution, either as a drench or by stomach tube. In acute infections, an initial dose of 0·1 g. per kg. body weight in solution induces a blood concentration of 5 mg.% within three hours. This is followed by one third of this dose given as a drench, or in the drinking water, every eight hours for 3–4 days, continued in any case for 2–3 days after the acute symptoms have subsided. If the drug must be given in solid form (bolus or powder) an initial dose of 0·15 g. per kg. is followed by 0·05 g. per kg. every eight hours.

In young calves which have never ruminated the mode of absorption is not understood, but A. believes that it is similar to that in the horse and recommends an identical scale of dosages.

In cattle which have reached the rumination stage, the problem is complicated because administration in the solid form or as a solution fails to bring about the desired blood concentration. The reasons for this are discussed. Addition to the solution of sodium bicarbonate, oil in emulsion, or acid, or administration as a bolus have no effect. Accordingly in acute infections an initial dose of 0·05 g. per kg. body weight is given intravenously together with 0·10 g. per kg. by mouth. This is followed by 0·075 g. per kg. given as a solid or in solution by mouth every 12 hours, to be continued for the same periods as in the horse.—G. B. BROOK.

I. BALLON, H. C., & GUERNON, A. (1942). **The Effect of Sulfathiazole and Allied Compounds on Human Tubercle Bacilli in vitro.**—*Amer. Rev. Tuberc.* **45.** 212–216. [Spanish summary].

II. BALLON, H. C., GUERNON, A., & SIMON, M. A. (1942). **Sulfathiazole in Experimental Tuberculosis of the Guinea Pig.**—*Ibid.* 217–228. [Spanish summary].

I. Sulphathiazole and sulphamethylthiazole exert a pronounced inhibitory effect upon the growth of virulent human tubercle bacilli on solid media. Sulphapyridine, promine, and sulphanilamide under similar conditions exert a less striking inhibitory effect. The inhibitory effect of sulphathiazole and sulphanilamide was not observed when a liquid medium was employed. Bactericidal tests with sulphathiazole gave negative results.

II. Ninety-five g. pigs were injected subcutaneously with virulent human tubercle bacilli. Sixty-three were treated with sulphathiazole, the first treatment being given five days after infection. The remainder were used as controls. The dose of sulphathiazole varied from 0·16 to 0·95 g. per kg. body weight. The higher doses appeared to exert some inhibitory effect upon the development of the TB. The authors state that these results do not permit of clinical application. —J. M. ROBSON.

BEAMER, P. R. (1942). **Sulfanilylguanidine in Control of Salmonella Infection and Carrier State in Mice.**—*Proc. Soc. exp. Biol., N.Y.* **49.** 418–421.

Two strains of laboratory mice which became infected with *S. enteritidis* were given an initial dose of 12–15 mg. followed by daily doses of 6–8 mg. of sulphanilylguanidine. Although the chemotherapy was not effective in all cases, it did reduce the number of infected animals considerably.—R. ALLCROFT.

HORTON SMITH, C. (1942). **Sulphaguanidine in Avian Coccidiosis.**—*Vet. Rec.* **54.** 259.

The author confirms the coccidiostatic effect of sulphaguanidine in chickens, when it was given to them on each of five days prior to the administration of oocysts, and on each subsequent day for the duration of the experiment (9–10 days). Almost complete inhibition of development of the oocysts was obtained when 0·2 or 0·5 g. of the drug was fed daily in capsules to two-week-old birds, or when it was mixed in the ration in the proportion of 1% by weight. A marked reduction in oocyst output occurred when the drug was mixed in the ration in the proportion of 0·5% by weight. The experiments are being continued to determine whether prolonged treatment of chickens with sulphaguanidine is injurious.—D. G. DAVEY.

I. ROBSON, J., & TEBRICH, W. (1941). **Penetration of a Water-soluble Sulphonamide, Sodium Sulphacetamide (Albucid-soluble) into the Eyes of Rabbits.** —*Nature, Lond.* **148.** 695–696.

II. ROBSON, J. M., & SCOTT, G. I. (1942). **Effect of Certain Chemotherapeutic Agents on Experimental Eye Lesions produced by *Staphylococcus aureus*. [Correspondence].**—*Ibid.* **149.** 581–582.

III. ROBSON, J. M., & TEBRICH, W. (1942). **Penetration and Distribution of Sodium Sulphacetamide in Ocular Tissues of Rabbits.**—*Brit. med. J.* June 6th. 687–690.

I. A preliminary announcement of work described in greater detail in III.

II. Ulceration of the cornea in rabbits was produced experimentally by the injection of a coagulase-positive strain of *Staph. aureus*, and the lesions were treated by local application of sodium sulphacetamide,

penicillin, or a soluble preparation of sulphathiazole. Good results were achieved with penicillin, and obvious beneficial effects obtained with sodium sulphacetamide (30% solution), but the results with sulphathiazole were disappointing.

III. By the use of a specially designed funnel, solutions of sodium sulphacetamide (2·5 or 30%) were continuously applied to the eyes of rabbits while the animals were under ether anaesthesia. It was shown that the drug diffused rapidly into the conjunctiva and cornea, more slowly into the aqueous humor, iris, and sclera, and hardly at all into the lens. Under these conditions of continuous application, high concentrations of the drug in the conjunctiva and cornea were attained even with the lower concentration. When, however, drops were instilled into the conjunctival sac, only the 30% solution maintained therapeutic concentrations for one hour, and then only in the conjunctiva and cornea.

It is suggested that, in clinical treatment, strong solutions such as 30% may have to be applied at frequent intervals if effective concentrations of the drug in the ocular tissues are to be maintained over prolonged periods; alternatively, it is possible that the same results may be achieved by the application of the drug in the form of an ointment.—D. G. Davey.

Schmid, F., & Thiem, W. (1942). Die Wirkung von Wurmmitteln auf die verschiedenen Strongylidenarten des Pferdes. III. Arsinsäure. **[Action of Anthelmintics on the Various Horse Strongyles. III. Arsonic Acid].**—*Dtsch. tierärztl. Wschr.* **50.** 71–73. [For part II, see *V. B.* **12.** 311].

Schmid, F., & Buhner, F. (1942). Die Wirkung von Wurmmitteln auf die verschiedenen Strongylidenarten des Pferdes. IV. Perequid-Tabletten und V. Noëmin. **[Action of Anthelmintics on the Various Horse Strongyles. IV. Perequid Tablets. V. "Noemin"].**—*Ibid.* 186–187.

III. Intravenous injection of arsonic acid (preparation 4002, I.G.), especially in combination with peroral administration of allegan, is stated to lead to a reduction in numbers of strongyle ova in the faeces.

IV & V. Perequid, a compound containing antimony and arsenic, when given orally is claimed to reduce the number of *Trichonema* eggs in the faeces. "Noemin" had no action on the strongyles.—H. Blaschko.

Whitlock, J. H. (1942). **Studies upon *Strongylus vulgaris*. VI. Tests with Organic Copper Salts.**—*J. Parasit.* **28.** 168–169. [For previous parts, see *V. B.* **11.** 775].

In vitro tests on *S. vulgaris*, similar to those already reported, have been made with the following copper salts:—sulphate, acetate, tartrate, sulphocarbolate, formate, and formate plus 0·1% sodium bicarbonate. The results show that copper tartrate, though relatively insoluble, is effective in destroying *S. vulgaris in vitro*. Copper formate is much more lethal than the sulphate, is not inactivated by sodium bicarbonate, and may prove superior to the sulphate as an anthelmintic.

—M. L. Bingham.

I. Shorb, D. A., Habermann, R. T., & Heemstra, L. C. (1941). **Comparison of the Efficacy of Phenothiazine and Copper Sulphate-Nicotine Sulphate Mixture as Anthelmintics for Sheep.**—*Vet. Med.* **36.** 502–506.

II. McCulloch, E. C., & McCoy, J. E. (1941). **Treatment of Ovine Taeniasis with Lead Arsenate.**—*J. Amer. vet. med. Ass.* **99.** 496–497.

I. The authors compared the efficacy of the regular dose of copper and nicotine sulphates, consisting of 90 ml. of a mixture containing 0·9 g. copper sulphate and 0·9 ml. of a 40% solution of nicotine sulphate, given as a drench to 85 ewe lambs, with that of 25 g. of commercial phenothiazine, given by capsule to 30 ram lambs of the same flock. Indication of the relative efficacy of the treatments was based on egg counts made from single pellets of faeces from ten animals in each group. The eggs of the various nematode genera concerned were counted and, it appears, identified from preparations made by direct centrifugal salt flotation at weekly intervals. A second treatment, using the same doses of the respective drugs, was given after six weeks. The egg counts indicated that phenothiazine was the more effective of the two drugs against all worms present, except *Moniezia*.

II. The authors found the administration of 0·5 g. of lead arsenate in capsules to be an effective and reasonably safe vermifuge against *Moniezia* sp. in yearling lambs, whereas a dose of 24 g. of phenothiazine was without effect in lambs harbouring this tapeworm.

—J. N. Oldham.

Habermann, R. T., & Shorb, D. A. (1942). **The Effect of Phenothiazine-Salt Mixtures on the Development of Parasite Larvae in the Faeces of Sheep.**—*N. Amer. Vet.* **23.** 318–321.

Previous work by the authors has shown that the daily administration of 0·5 g. of phenothiazine to sheep prevents the development of nematode larvae in the faeces. In searching for a practicable means of utilizing this fact, they experimented to determine whether the effect could still be attained by feeding phenothiazine in salt mixtures. They obtained a satisfactory reduction in the number of larvae developing in the faeces by allowing their sheep access to phenothiazine-salt mixtures in the range of 1 : 9 to 1 : 14. The six sheep used in the experiments were kept in individual pens, and it remains to be determined whether similar mixtures would be efficacious under field conditions.

—D. G. Davey.

Swanson, L. E. (1942). **Phenothiazine as an Anthelmintic for Removal of Gastrointestinal Parasites of Sheep and Calves.**—*N. Amer. Vet.* **23.** 184–185.

This is a short general article with little new information. S. emphasizes the value of phenothiazine as an anthelmintic for several of the species of nematodes in sheep and cattle, and recommends 25 g. as a dose for adult sheep, and 30–80 g. for cattle. He has not observed any deaths attributable to phenothiazine poisoning in these animals.—D. G. Davey.

Olsen, M. W., & Allen, E. A. (1942). **Fever Therapy in the Control of Cecal and Liver Trichomoniasis in Turkeys.**—*Poult. Sci.* **21.** 120–127.

This is probably the first time that fever therapy has been applied in the treatment of diseases in birds. The authors tested the value of the treatment on turkeys infected with liver and caecal trichomoniasis. Treatment included the recording of weights and body temperatures, and placing the birds in a heated chamber and submitting them to temperatures of 104°–106°F., and to a relative humidity of approximately 50%, for 1–2 hours. 83·3% of the infected birds receiving the fever therapy recovered, as against 30·6% of the controls; the recovered birds showed no ill effects from the treatment.—C. Horton Smith.

León, L. A., & Castillo de León, B. (1942). La rotenona en el tratamiento de la tricomoniosis intestinal. **[Treatment of Intestinal Trichomoniasis with Rotenone].**—*Rev. Med. trop. parasit., Habana.* **8.** 2–5.

The authors found rotenone to be a useful anthel-

mintic in ascarid, ancylostome, taenia, and strongyle infestations in human beings. It was most effective in ascariasis and ancylostomiasis. The substance also proved to be an effective remedy against intestinal trichomoniasis of children in Cuba. The drug was used as an extract of *Lonchocarpus utilis* containing 4% rotenone, given in gelatin capsules along with castor oil. No ill effects were noted.—MILLER WATSON.

SMITH, C. E., LIVENGOOD, E., & ROBERTS, I. H. (1941). **The Value and Relative Effectiveness of Preparations of Rotenone, Derris Powder and Cube Powder as Larvicides for Cattle Grubs.**—*J. Amer. vet. med. Ass.* **99.** 391–394.

Control of *Hypoderma lineatum* was obtained by dressing cattle once in each season of activity with a wash consisting of 4 oz. soap dissolved in 1 gal. water, and 12 oz. derris or cube powder. Chemically pure rotenone and a preparation containing 90% rotenone were not as effective as derris or cube powders.—W. M.

SYMES, C. B., MCMAHON, J., & HADDOW, A. J. (1942). **Pyrethrum Powder: a Preliminary Note on its Use in the Control of Insect Vectors of Diseases.**—*E. Afr. med. J.* **18.** 360–376.

"Light" dustings of pyrethrum powder were given to the floors and walls of selected quarters, and searches were made for dead and surviving insects both in these quarters and in others selected as controls. Many dead insects, including cockroaches, bedbugs, houseflies, and earwigs were found in the treated houses whilst none was found in the control quarters. Observations on surviving insects appear to have been largely restricted to mosquitoes.

Dusting seemed to be valuable for fly destruction for three days after application. Fleas in glass cylinders with muslin-covered ends, which were placed in treated apartments, appeared to be killed although the dusting was not aimed in the direction of the cylinders. Lice brought in contact with pyrethrum powder were killed in a few minutes, as were bedbugs, whilst the dusting of houses kept them relatively free from mosquitoes for three days.—U. F. RICHARDSON.

MAILEN, T. H., & FENTON, F. A. (1941). **Repellency in Cattle Sprays.**—*Soap.* **17.** No. 12. 133–135.

The authors consider the one-half cow method of repellency testing to be the most efficient in field testing since it eliminates the factor of variation in animal attractiveness to blood-sucking flies. They describe an apparatus which prevents spray mist from being carried from one side of the animal to the other and which does not rub off the spray material as in the blanket method.
—W. MOORE.

—. (1941). **Cattle Spray Testing. [Report of Cattle Spray Test Committee, National Association of Insecticides and Disinfectant Manufacturers].**—*Soap.* **17.** No. 8. 92–97 and 119–121.

This paper summarizes the different methods for evaluating livestock sprays, and includes a bibliography of 76 references.—W. MOORE.

SEARLS, E. M. (1941). **Droplet Size of Insecticides.**—*Soap.* **17.** No. 2. 94–96.

When a livestock spray is applied in such a fine mist that it does not adhere to surfaces, it is practically useless. Best results are obtained when the nozzle of the sprayer is so adjusted that fine droplets are produced on a sheet of brown paper held at a distance of 3 ft.
—W. MOORE.

KNIPLING, E. F. (1941). **Toxicity of Certain Chemicals to the Fleece Worms *Phormia regina* (Meig.), *Cochliomyia macellaria* (F.) and *Lucilia sericata* (Meig.).**—*J. econ. Ent.* **34.** 314–317.

K. describes a method for evaluating the toxicity of drugs to flesh-fly larvae under laboratory conditions. In this test *L. sericata* showed the greatest resistance to arsenical compounds and in general to organic poisons. Sodium arsenite, diphenyl sulphoxide, *p*-nitroanisole *p*-nitrophenetole, and *m*-dinitrobenzene were found to be the most toxic of 30 organic and seven inorganic compounds tested. Boric acid also showed considerable toxicity to all three species.—W. MOORE.

*YAKIMOV, V. L., GUSEV, V. F., & MELNIKOVA, A. D. (1940). **[Treatment of Bovine Theileriasis].**—*Rev. Microbiol., Saratov.* **19.** 158–167. [In Russian]. [Translation of abst. in *Zbl. Bakt. I.* (*Ref.*). **140.** 222].

Piroplasmin alone or in combination with flavacridine and urotropine did not give good results in *T. annulata* infection. Better results were obtained with flavacridine alone and very good results with bismuth preparations.

HEGNER, R., & DOBLER, M. (1941). **Effects of Oxygen at Different Pressures on Avian Malaria Infections.**—*Amer. J. Hyg.* Sect. C. **34.** 14–17.

As nearly all merozoites of certain species of avian malarial parasites invade young red blood cells, studies have been made on the effects of so modifying the host that the percentage of young r.b.c. in the blood was changed. The percentage of reticulocytes was increased by treating canaries with phenylhydrazine chloride; this was found to increase the percentage from a normal of 10 to 90, and the number of parasites might increase to 4–6 times that found in untreated birds. Decreasing the percentage of reticulocytes is difficult; the authors attempted to do this by modifying the barometric pressure and quantity of oxygen available to birds. Four series of experiments were undertaken with female canaries infected with *Plasmodium cathemerium* and *P. relictum*. It was found that infections were less severe in birds maintained in a high-oxygen atmosphere at normal pressure than in birds in a room atmosphere, but no significant differences were found in the reticulocyte percentages. No significant differences were evident between controls and test birds maintained in a high-oxygen atmosphere at high and low pressures.
—C. HORTON SMITH.

HEGNER, R., WEST, E., RAY, M., & DOBLER, M. (1941). **A New Drug Effective Against Bird Malaria.**—*Amer. J. Hyg.* Sect. C. **33.** 101–111.

Attempts have been made for a number of years to find a drug which is less toxic than quinine for the treatment of avian malaria. A quinine derivative, hydroxyethylapocupreine dihydrochloride, has proved suitable. The drug was tested on *Plasmodium lophurae* in ducks, *P. relictum* in pigeons, and *P. cathemerium* in canaries. In these species the therapeutic effects of the drug are similar to those of quinine hydrochloride. Intravenous, intraperitoneal, and intramuscular injections differed little in their effects on *P. lophurae*. Oral and intravenous administration were found to be effective against *P. relictum*.—C. HORTON SMITH.

KUNERT, H. (1942). Die Einwirkung von intravenösen und peroralen Gaben von Bayer 205 auf Trypanosoma rhodesiense im Liquor cerebrospinalis. **[Action of Intravenous and Peroral Doses of Bayer 205 on *T. rhodesiense* in the Cerebrospinal Fluid].**—*Zbl. Bakt. I.* (*Orig.*). **148.** 279–289.

Records are given of the treatment with Bayer 205 of 11 cases of Rhodesian sleeping sickness in which the cerebrospinal fluid had been invaded. Five cases were

treated by intravenous injection, and six cases by a preliminary oral administration followed by intravenous injection. Six cases made an apparent recovery, and it was thought that the low cell count of the spinal fluid in these cases might indicate that the invasion of the nervous system had been recent. It was shown that after both oral and intravenous injection Bayer 205 enters the cerebrospinal fluid, and is at an only slightly lower concentration there than in the blood. It is suggested that the trypanosomes in the structure of the choroid plexus escape the action of the drug, and that they re-enter the spinal fluid when the drug concentrasion there has dropped below the lethal level, the relapse ttrains having acquired drug-fastness.—U. F. R.

INNES, J. R. M. (1941). **The Chemotherapy of Tropical Protozoal Diseases.**—*Vet. Rec.* **53.** 635–638.

This is a brief account of the more important considerations in the chemotherapy of tropical protozoal diseases ; no original work is given.—D. G. DAVEY.

—. (1942). **The Mode of Action of Chemotherapeutic Agents. A Discussion held by the Biochemical Society on Saturday, 29 November, 1941, at the Courtauld Institute of Biochemistry, Middlesex Hospital.** [Speakers : FINDLAY, G. M., FLEMING, A., WARRINGTON YORKE, HAWKING, F., DALE, H. H., WOODS, D. D., MCILWAIN, H., CHAIN, E., ABRAHAM, E. P., LINNELL, W. H., GOODWIN, L. G., BRADBURY, F. R., JORDAN, D. O., HUGGETT, A. St. G., & BOYLAND, E.].—*Biochem. J.* **36.** 1–7.

The contribution of each of the speakers at this meeting of the Biochemical Society is given in précis form. In one way or another most aspects of chemotherapy were touched upon, and reference was made to most of the well known chemotherapeutic substances such as penicillin, diamidino compounds, sulphonamide derivatives, etc. Penicillin, particularly, was considered in some detail. Many of the speakers, notably HAWKING on trypanocides, and WOODS and MCILWAIN on antibacterial substances, followed the instructions implied in the title of the symposium and raised interesting points concerning the manner in which the various drugs might act. Readers interested in chemotherapy are advised to consult the original.

—D. G. DAVEY.

TILLEY, F. W. (1942). **An Experimental Study of the Influence of Temperature on the Bactericidal Activities of Alcohols and Phenols.**—*J. Bact.* **43.** 521–525.

The bactericidal efficiencies of various alcohols and phenols on *Staphylococcus aureus* and *Salmonella typhi* were determined by a modified Rideal-Walker technique, Different dilutions of culture were exposed to the action of the disinfectant at temperatures 10 centigrade degrees apart for varying intervals of time.

Temperature coefficients were calculated by dividing the disinfection time in minutes at the lower temperature, by the disinfection time at the higher temperature. Average temperature coefficients were obtained, of sufficient accuracy to permit their use in calculating disinfection time at one temperature, from results obtained at another. The evidence indicated that the effect of temperature on bactericidal activity varies with the disinfectant and with the organism tested.—ISOBEL W. BURTON.

BARNES, J. M. (1942). **CTAB : A New Disinfectant and Cleaning Agent.**—*Lancet.* **242.** 531–532.

Experiments with solutions of cetyltrimethylammonium bromide (CTAB), a cationic detergent, have shown it to be capable of materially reducing the number of bacteria on normal skin, and of completely sterilizing dirty and greasy bowls and baths. It may be of value in cleaning dirty wounds, though it does not sterilize them. A 1 : 1,000 solution of CTAB will rapidly destroy leucocytes *in vitro*.—J. M. ROBSON.

GOODMAN, L. S. (1942). **Some Recent Advances in Drug Therapy.**—*Bull. N. Y. Acad. Med.* **18.** 112–136.

A short but clear review of recent advances in the use of drugs with an attempt to assess which of these are likely to be of practical value. Among the drugs mentioned are :—new sulphonamides (and local and prophylactic uses), atropine substitutes, vitamins (thiamin, nicotinic acid, riboflavin, vitamin K), heparin (in prevention of thrombosis and embolism), picrotoxin (in barbiturate poisoning), benzyl benzoate (in scabies), phenothiazine (vermifuge in farm animals), rotenone (as insecticide), penicillin and gramicidin (antibacterial agents).—J. M. ROBSON.

—. (1941). **Fourth Addendum to the British Pharmacopoeia.** pp. viii+59. London : Constable & Company Ltd. [8vo] [5s.].

The fourth addendum to the pharmacopoeia makes a number of important additions, which include mandelic acid, nicotinic acid, benzyl benzoate, digoxin, ephedrine, nikethamide (used for some time now as the preparation coramine), pamaquin (the pharmacopoeial equivalent of plasmoquin), proflavine sulphate, and sulphanilamide. Various alterations have also been introduced owing to war conditions, *e.g.*, the replacement of glycerin by sodium lactate (as in cataplasma kaolin) or by honey (as in honey of borax), or its omission in various preparations (*e.g.*, tincture of ipecacuanha). Alterations have also been made in the solutions used for various chemical tests. The methods now recommended for sterilizations and for dispensing preparations for parenteral injection are given in an appendix.

—J. M. ROBSON.

WELCH, H., & BREWER, C. M. (1942). **Relative Toxicity of Certain Antiseptics Containing Soap and Alcohol.**—*Amer. J. publ. Hlth.* **32.** 261–267.

Using the destruction of phagocytic activity as a measurement of toxicity and comparing toxicity with germicidal activity under a similar set of conditions to obtain a toxicity index, the authors found that the addition of alcohol to a solution of phenol increased the toxicity index. A very marked increase in the toxicity index occurred when soap was added to phenol solutions, and to several phenolic compounds and essential oils.

—J. M. ROBSON.

WELCH, H., & BREWER, C. M. (1942). **The Toxicity-Indices of Some Basic Antiseptic Substances.**—*J. Immunol.* **43.** 25–30.

The relative toxicity of a number of commonly used antiseptics and widely different germicidal substances has been determined by a method previously described [see *V. B.* **11.** 130]. By a comparison of the destruction of the phagocytic activity of the blood with the germicidal capacity, their toxicity index has been calculated. Alcohol showed a relatively high toxicity index and the wisdom is questioned of using tinctures on open wounds when the active ingredients are water soluble.—J. M. ROBSON.

PUBLIC HEALTH

—. (1942). **Report of the Committee on Meat and Milk Hygiene.**—*Proc. 45th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 63–64.

The committee refers to progress in disease control. Bovine TB. has been effectively controlled, brucellosis is in the process of being controlled, and mastitis still awaits a control campaign. It is recommended that state financial backing be made available so that every veterinarian dealing with mastitis should be able to call in laboratory aid, which is necessary in the detection of early infection.—J. E.

*Reichert, P. (1940). Wachstum von Bact. enteritidis Breslau auf künstlich infiziertem Fleisch bei Kühlschranktemperatur. **[Growth of *S. enteritidis* on Artificially Infected Meat at Cold Store Temperature].** —*Inaug. Diss., Berlin.* [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **140.** 66].

The organism grew only in meat which remained moist and growth therefore depended on the blood and water content of the meat as well as on the humidity of the cold storage room.

Keller, H. (1941). Der Lymphonodus xiphoideus, ein bei Brust- und Bauchfelltuberkulose zu beachtender Lymphknoten. **[The Xiphoid Lymph Node, which should be Noticed in Cases of Pleural or Peritoneal TB.].**—*Z. Fleisch- u. Milchhyg.* **51.** 279–282.

The xiphoid lymph node in cattle is inconstant. It was found on the left in 40% and on the right in 30% of 40 bovine carcasses with thoracic and abdominal TB. The node was tuberculous on the left side in 23% and on the right side in 13% of the cases. K. recommends that in cases of TB. of the tissues in the sternal region, the xiphoid lymph nodes should be sought and removed if tuberculous.—J. Z.

*Haupt, M. (1941). Tierkörperbeseitigung und -Verwertung. **[Animal Carcass Disposal and Utilization].**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **49.** 568].

The dry processes of carcass utilitization, in which the material is boiled in its own water without the use of steam, compare favourably with the wet processes both as to yield and to simplicity of method.—H. B.

TECHNIQUE AND APPARATUS

I. Marton, L. (1941). **The Electron Microscope. A New Tool for Bacteriological Research.**—*J. Bact.* **41.** 397–413.

II. Mudd, S., & Lackman, D. B. (1941). **Bacterial Morphology as Shown by the Electron Microscope. I. Structural Differentiation within the Streptococcal Cell.**—*Ibid.* 415–420.

I. A simple account of the electron microscope. Electron optics are governed by exactly the same laws as light optics and the same difficulties are encountered as in the construction of a normal microscope. An electron beam is used instead of light and the normal lenses are replaced by magnetic fields. An image can be seen on a fluorescent screen or photographs can be taken. The limit of resolving power is about 10Å. In order that the electrons are not disturbed in their path, a high vacuum has to be maintained in the whole microscope. Image formation is due to scattering of electrons and only differences of density or thickness can be detected. Specimens have to be mounted on very thin films of collodion of uniform density; they do not have to be fixed, and the ordinary staining technique is valueless. There is a periscope system so that the primary magnification produced by the object lens can be viewed; this facilitates the choice of a suitable field for observation. Focusing is carried out by varying the strength of the magnetic fields, acting as lenses, and the magnification is adjusted in the same way. A bibliography on the ultramicroscope is appended.

II. The electron microscope is obviously a new tool of great importance, but it has certain limitations: the object has to be viewed in a vacuum, it must be extremely thin, and it is not known what changes are produced in the protoplasm by the electron beam.

Photographs show that the individual streptococci in a chain may be joined by a broad band of material, by a narrow band, or by a filament which is only just resolved. There are marked changes in the density of cells as they undergo degeneration. It is stated that, taken together, the photographs seem very definitely to indicate that streptococcal cells do possess rigid outer membranes whose continuity accounts for the grouping in chains, and which are differentiated from the inner protoplasm.—John Francis.

Mudd, S., Polevitzky, K., Anderson, T. F., & Chambers, L. A. (1941). **Bacterial Morphology as Shown by the Electron Microscope. II. The Bacterial Cell-Wall in the Genus *Bacillus*.**—*J. Bact.* **42.** 251–264. [See also preceding abst.]

The authors emphasize the care that is demanded in the interpretation of electron micrographs, but they believe that electron micrographs show that bacteria of the genus *Bacillus*, *viz*, *B. subtilis*, *B. megatherium*, and *B. anthracis*, possess cell walls which are definite morphological structures. An inner protoplasm may shrink away from this wall, for example, in old cultures, or may escape after injury, *e.g.* cytolysis and fragmentation by sonic vibration, leaving the cell wall still in the shape of the intact cell. This cell wall serves to resist the action of relatively powerful surface forces which would otherwise make the cell spherical. An interesting micrograph (×20,000), shows the cell wall of *B. anthracis* (as distinct from the capsule), continuous from one bacillus to the next in a chain. The flagellae of *B. subtilis* are shown to be continuous with the cell wall.—E. C.

Svěrák. (1941). Der dreifarbige Nährboden nach Hökl zur Prüfung auf die Koli-Salmonella-Gruppe. **[Hökl's Triple Dye Culture Medium for Testing for Coli-Salmonella Bacteria].**—*Z. Fleisch- u. Milchhyg.* **51.** 285–286.

The composition is described of Hökl's culture medium for the bacteriological examination of meat. *Bacterium coli* colonies are red and salmonella colonies are blue. This medium is preferred to Endo- or Drigalski-Conradi agar because of its greater sensitiveness and pronounced colour differences. It has been used for more than five years with good results.—J. Z.

Curran, H. R., & Evans, F. R. (1942). **The Killing of Bacterial Spores in Fluids by Agitation with Small Inert Particles.**—*J. Bact.* **43.** 125–138.

This is an investigation of the factors influencing the germicidal efficiency of prolonged mechanical agitation of bacteria and spores, with various types of abrasives, including sand, pyrex chips, carborundum, and glass beads. It was found that glass beads were superior to angular abrasives because they did not dis-

integrate during prolonged shaking. The degree of hardness of the abrasive had no marked effect on the results. The most effective particle size varied with the abrasive used. The percentage of spores killed was in inverse proportion to the number of spores present, and in direct proportion to the speed of shaking, and the number of particles of abrasive. There was no indication of a relation between thermal resistance of spores and their resistance to mechanical disintegration.

In an experiment with vegetating cells, the germicidal activity was found to be greater when the bacteria were suspended in water than when they were suspended in foam-producing liquids which retarded the velocity of the striking particles.

Suspensions of *Bacterium coli* were rendered sterile by five hours' shaking with glass beads, while suspensions of spores always contained some viable cells after the same treatment. The authors refer to the possibilities of preparing pure bacterial antigen by this method. —Isobel W. Burton.

MISCELLANEOUS

—. (1940). **Malayan Veterinary Association. First Annual Report and Statement of Accounts for 1939-1940.** pp. 33. Malacca: Wah Seong Press. [4to].

This report describes the founding of the association and the first meeting. The 38 members were drawn from all states of the Malay peninsula as well as from the Straits Settlements.

Papers were read and discussed on trypanosomiasis in Malaya, on the treatment of intestinal parasitism in dogs, on electrical stunning of pigs, and on rinderpest immunization. The trypanosomiasis paper was dealt with in *V. B.* **12.** 270; the second and third are conventional. The last touches on Indian conditions and mentions an outbreak of rinderpest in buffalo in Johore State.—J. E.

Zschiesche, A. (1940). Die Verbreitung von Tierseuchen im Deutschen Reich im Jahre 1937. **[The Incidence of Animal Diseases in Germany in 1937.]** —*Berl. Münch. tierärztl. Wschr.* Dec. 20th. 614–617.

The statistics used are obtained from "*Statistik des Deutschen Reiches*", Book 542, 1937 [not published until 1940, and unobtainable]. Z. compares the incidence of disease in 1937 with that in 1936 with special reference to notifiable diseases encountered in abattoirs and in the field, their method of introduction into the Reich, and their distribution throughout the provinces. Detailed figures are given and, in the case of TB., figures for the thoracic, abdominal, and mammary forms, etc., of the disease are included. The cost of controlling disease in Germany has increased as has also the number of persons engaged in this work.—Alex. B. Paterson.

—. (1940). Voprosam sanitarii—dolzhnoe vnimanie. **[A Survey of Sanitary Measures in Recent Years in the U.S.S.R.].**—*Sovyet Vet.* No. 4. 2–5.

A survey giving no new material.

Mattick, A. T. R., Hiscox, E. R., & Davis, J. G. (1941). **Biennial Reviews of the Progress of Dairy Science. Section B: Bacteriology and Mycology Applied to Dairying.**—*J. Dairy Res.* **12.** 350–390.

This review is concerned with (1) milk control, (2) lactic acid and allied fermentations, (3) pasteurization, and (4) detergents and disinfectants, milk quality tests being reviewed under (3).

Daubney, R. (1942). **The Suitability of the White Highlands of Kenya for Grade Cattle of European Breeds.**—*E. Afr. agric. J.* **7.** 127–141.

D. reviews and discusses the factors to which the degeneration of European and high-grade cattle in a tropical environment have been attributed. These factors may be related chiefly to the nutritional plane, to sublethal infections with certain tropical protozoan diseases, to excessive tick infestation, and to the direct physiological effects of high atmospheric temperatures and intense solar radiation. Observations in Kenya indicated that such degeneration as has been observed in ranched herds is largely referable to nutritional deficiencies, and that repeated attacks of redwater and anaplasmosis do not play an important or even a contributory part in this respect in most of the White Highlands. No evidence has been found that in this locality the direct physiological effects of climate *per se* have been in any way responsible for degeneration of purebred or grade cattle. On the contrary, climatological data indicate that this area is well suited to the raising of cattle of the European breeds. Physiological studies conducted at Kabete and elsewhere have shown that no great significance need be attached to small afternoon rises in body temperature or respiration rate as evidence of poor adaptation to climate; body form and weight, productive capacity, and the state of the coat were found to be more reliable indications of adaptation to local conditions. The general conclusion arrived at by D. on the basis of observations in Kenya and of those of investigators elsewhere is that European stock can be raised without deterioration in areas where the mean annual temperature does not exceed 65°F. provided that the management is good and the nutritional plane adequate. In areas where the mean annual temperature falls between 65° and 70°C., D. suggests that improvement of the native cattle should be effected, in the early stages at any rate, by the use of high-class Indian Sahiwal bulls.—N. J. Scorgie.

East, L. P. (1942). **Livestock Transportation.**—*J. Amer. vet. med. Ass.* **100.** 305–309.

An article of general interest in which the history, methods, and regulations relating to livestock transportation in the U.S.A. are discussed.—D. D. Ogilvie.

von Sybel, H., & Ober, J. (1942). Die Klimatisierung der Viehställe. **[Cow-Byre Construction with Reference to Atmosphere, Ventilation etc.].**—*Berl. Münch. tierärztl. Wschr.* Jan. 23rd. 19–22.

Four conditions are essential for the maintenance of a healthy atmosphere in cow-byres :– (1) the temperature must be adapted to the kind and age of the animals; (2) humidity must not exceed 70%; (3) draughts must be excluded, and (4) there must be not more than 2·5–3 parts per thousand of CO_2 and other gases from respiration, dung and other sources. One of the most important factors is therefore aeration. In this connexion it is pointed out that conditions can be regarded as satisfactory if for each "large animal" unit (= 500 kg. body weight), 50 cu.m. of air are exchanged per hour. This rate of exchange is, however, only sufficient if liquid and solid excretions of the animals are regularly and systematically removed from the byre. Another great difficulty and important necessity, especially in the winter, is the depressing of the humidity content of the air. This can obviously not be done solely by a very active system of aeration, as too great an exchange of air would considerably lower the temperature of the byre. The author discusses the material with which buildings should be erected to ensure the best conditions of aeration, and wood and pumice-stone-like concrete

are mentioned as being particularly suitable. Construction of the roof and heating of the byre are described as well as the building of a special aerating chimney. Detailed drawings are given.—E. R. Pariser.

Shanks, P. L. (1942). **The Housing of Pigs.**—*Vet. Rec.* **54.** 233–235.

The pig census in N. Ireland increased from 112,412 in 1925 to 570,058 in 1937. The animals were accommodated in a great variety of buildings, and under equally variable hygienic conditions. Disease (coughing, pneumonia, paratyphoid, outbreaks of savaging and tail-biting, etc.) became rife on many farms, and S. was commissioned to investigate the responsible factors. These were found to include cold, overcrowding, and faulty hygiene generally; much success attended the removal of these factors.

Plans and a description are given of a piggery which is stated to have proved eminently satisfactory. The building is long and low, and consists of a number of self-contained houses, each comprising a double pen which has access to a partially-covered separate yard. The floors and walls up to 3 ft. 3 in. are concreted, the top part of the walls being of tongued and grooved sheeting. The roof is double, and Louvre roof ventilation is provided. The feeding troughs are so arranged that meal is not spilt and the animals are unable to stand in them. Swing doors composed of rubber sheeting are used between the pen and the run. Drinking bowls are provided in the yards. Various heat-conserving devices are fitted, and it has been found that in a week of exceptionally heavy frost the temperature throughout the whole period remained at 79°–81°F. The air space is about 50 cu. ft. and the floor area about 6½ sq. ft. per animal; these figures are much lower than those cited by Linton [see *V. B.* **11.** 205].

—Alastair N. Worden.

Baylis, H. A. (1942). **Zoological Nomenclature and Medical Science. [Correspondence].**—*Trans. R. Soc. trop. Med. Hyg.* **35.** 333–334.

B. advances the view that an animal species should not be recognized and named except on the basis of morphological characters. When physiological differences exist between two strains which are apparently identical in morphology, it is better to regard one as a race or subspecies of the other, and to give it, if necessary, a trinomial name. [This procedure is frequently followed in referring to the pig and human strains of *Ascaris*. The human strain is *Ascaris lumbricoides* and the pig strain is *A. lumbricoides* var. *suis*.]—D. G. Davey.

Morgan, E. (1940). **The Tropical Grass "Melinis Minutiflora" as a Preventative against Malaria and other Tropical Diseases.**—*J. trop. Med.* (*Hyg.*). **43.** 179.

Venezuela has a relatively small population owing to the ravages of malaria. During the last ten years much headway has been made in the control of the disease by planting *M. minutiflora* in the neighbourhood of houses. When this grass is green it possesses a penetrating but not unpleasant scent which appears to discourage snakes, mosquitoes, ants, ticks, etc., as they are not found in the planted areas. The grass, which is rich in protein and is thus useful for fattening cattle, flourishes on arid soils which have been cleared before sowing. Seed, to the extent of about 8 lb. to the acre, is sown on the surface of the soil and, under favourable conditions, germination requires three weeks. The grass is most frequently used as pasturage, but heavy crops can be obtained for cutting as fodder for stall feeding.—C. H. S.

—. (1942). **Report of the Committee on Biologics.** —*Proc. 46th Meet. U.S. Live Stk sanit. Ass., 1941.* pp. 193–194.

Representations to the Federal Government to control the sale, distribution, and use of biological products containing live viruses or organisms, resulted in the issue of Amendment 15 to the Bureau of Animal Industry Order 276. This amendment became operative on January 1st, 1942. The text is not given.—D. D. O.

*Schaaf, J. (1940). Die Veterinär-Institute im deutschen Generalgouvernement Polen und ihre Bedeutung für das Veterinärwesen. **[Veterinary Institutes in the General Gouvernement of Poland and their Veterinary Importance].**—*Dtsch. Tierärztebl.* **7.** 166–169. [Abst. from abst. in *Jber. Vet.-Med.* **68.** 77].

Before the present war, veterinary studies in Poland were carried out at the veterinary faculty of Warsaw University and at the Veterinary Academy in Lwow. In addition, there existed a veterinary department of the Government Agricultural Institute at Pulawy to which were affiliated veterinary institutes at Bromberg, Cracow, Brest-Litovsk, and Vilna. There were veterinary laboratories in all the larger towns, attached to the local abattoirs or to the food-inspection centres. At Michalowka, there existed a State serum institute where sera and vaccines were prepared against swine fever, swine erysipelas, anthrax, haemorrhagic septicaemia, and blackleg. Research was in progress, directed chiefly towards the improvement of methods of diagnosis and the eradication of parasitic diseases.

During the Polish campaign, the institutes at Pulawy and Michalowka were almost completely destroyed. Both, so S. asserts, were rebuilt and re-equipped as soon as the German administration had taken control of the country. These institutes are still staffed by Polish veterinary surgeons who, however, are under German supervision. Their activities are devoted to the control of notifiable diseases, the inspection of meat and other foodstuffs, and the manufacture of sera and vaccines.—M. Landau.

I. Steck, W. (1941). Reflexionen zur Entwicklung tierärztlicher Forschung in unserem Lande. **[Development of Veterinary Research in Switzerland].**—*Schweiz. Arch. Tierheilk.* **83.** 61–66.

II. Flückiger, G. (1941). Zur Entstehungsgeschichte des eidgenössischen Vakzine-Institutes in Basel. **[History of the Federal Vaccine Institute at Basle].**—*Ibid.* 159–166.

I. S. discusses the need for facilities for veterinary research in Switzerland. Scarcity of funds has in the past prevented the founding of a self-contained veterinary research institute: instead what funds have from time to time become available have been allocated to the veterinary colleges at Zurich and Berne.

II. F. traces the history of plans and attempts made to found a State institute for supplying veterinary biological products for use in Switzerland. Finally an institute for the preparation of foot and mouth disease vaccine, and later on for the preparation of other biological products, has been constructed at a new abattoir built by the Basle city council. It was expected to be in use in the middle of 1942.—J. E.

Borisovich, F. (1940). Itogi XV plenuma otdeleniya veterinarnykh nauk. **[15th Plenary Session of the Veterinary Section of the Academy of Agricultural Science, U.S.S.R.]**—*Sovyet. Vet.* No. 1. pp. 86–88.

The conference discussed practical as well as theoretical problems. For each subject treated, reports and lectures were read by specialists. In the group of lectures on infectious diseases, the present position of

equine infectious anaemia was discussed in detail. It was reported that the number of affected animals had decreased four times in the period from the beginning of 1938 to the end of 1939. A lecture on the role of paratyphoid infection in abortion in mares adequately and inadequately nourished showed that insufficient attendance and care given to lactating mares increases their susceptibility to paratyphoid infection ; an increase in the vitamin content of the mare's food and an addition of 8–12 g. Ca and 5–7 g. P per food unit was recommended. Equine encephalomyelitis vaccine, prepared by inactivating the virus photodynamically, immunized 62% of inoculated rabbits and 84% of inoculated horses. New data on brucellosis were given. A single vaccination of horses with 5 ml. of a 1% alum tetanus antitoxin was advocated. In a lecture concerning a statistical survey of diseases of the digestive tract of the horse, a new classification of gastro-intestinal disturbances was proposed. Avitaminosis and prophylactic measures against diseases due to vitamin deficiencies were discussed.—E. R. Pariser.

Withell, E. R. (1942). **The Significance of the Variation in Shape of Time-Survivor Curves.**—*J. Hyg., Camb.* **42.** 124–183.

Studies of the bactericidal effects of two disinfectants, 0·5% phenol and 0·05% *p*-chlor-*m*-cresol, upon two organisms, a micrococcus and *Bacterium coli*, showed that a number of types of response are encountered, even when the experiments are carried out under practically identical conditions. These types include time-survivor curves, (1) giving a straight line when the logarithm of the number of surviving bacteria is plotted against time, and (2) with a variable lag phase before the straight line on plotting the logarithm of the survivors against time. These curves were analysed in greater detail by constructing the mean curve from the calculation of the mean slope of the time-survivor curve over various time intervals during the course of the reaction. These new curves showed the same variations as the individual time-survivor curves, but gave no explanation of the reasons for the variations in response.

Various theories, previously propounded, were examined in the light of the data secured in these experiments. The evidence was against the mechanistic theory that all organisms are of equal resistance. Vitalist theories assume that the variation in time-survivor curves is due to variations in the manner in which the resistances are distributed. The distribution of the survival times, however, is not normal but very decidedly skew. If, instead, the number of survivors is plotted against the logarithm of the time, the distribution gives a better approximation to normal for all types of time-survivor curves. This finding shows a close analogy to that of many pharmacological experiments in which the variations in animal response to a drug are more normally distributed when the logarithm of the time is employed.

The shape of the characteristic curve for any suspension of organisms in a particular experiment can be calculated from the logarithmic standard deviation of the survival times. All the different types of time-survivor curves encountered in experiments of this type, for the same organism and the same bactericide, suggesting fundamental differences in behaviour, are really due to variations in the way the resistances of the organisms are distributed ; this distribution is measured by the standard deviation of the logarithm of the survival times. The shape of the curve, apart from the manner in which the logarithmic standard deviation varies, is then dependent practically only on the strength of the bactericide.

Hence, the different rates of destruction of bacteria under the influence of a bactericide are determined essentially by differences in the way in which the resistances of the organism are distributed.—A. Eden.

OFFICIAL AND OTHER REPORTS

Great Britain. (1942). **British Empire Cancer Campaign. Eighteenth Annual Report of the Grand Council 1941.** [Edited by Lockhart-Mummery, J. P.] pp. 235. London : British Empire Cancer Campaign. [4to].

In spite of the war, cancer research in this country has continued and no important investigation has had to be abandoned or even seriously curtailed. The appeal organization of the Campaign, which at the outbreak of war was placed at the disposal of one of the war charities, has now been handed back in order that increased income may be available for cancer research. The author and subject indexes, the annual report and the lists of publications given bear testimony to the importance of the work carried out.

Research on carcinogenesis includes the investigation of new synthetic substances related to known carcinogens, the fate of carcinogenic hydrocarbons in the body, production of sarcomas in mice by injections of extracts of human liver, and the relation of hyperplasia to subsequent malignant changes. Further work has been carried out on immunity to filtrable fowl tumours, the metabolism of tumour tissues, and on a number of growth-inhibiting but non-carcinogenic substances some of which are deserving of clinical trial.

A mammary fibro-adenoma of the rat has been propagated for a period of five years and during this time there have been various structural alterations of the tumours produced, the most important being sarcomatous transformation. In male rats the tumour tends to be intracanalicular but reverts to a pericanalicular form when transplanted into female rats. Within the fibro-adenomas, small new tumours sometimes developed, most of them being cellular fibromas but in three cases a definite fibrosarcoma developed. It seems that the factors concerned are mainly hormonal and the results are important in their relation to human breast cancer.

Clinical work has been continued and a total of 15,100 case records are now included in the committee's register and the findings are being submitted to statistical analysis. The effects of various types of radiation have been studied in a wide range of biological material including plant viruses, bacterial spores, tissue cultures, small organisms, animal tumours, and human carcinomas.—E. G. White.

Canada. (1940). **National Research Council of Canada. Review of Activities for the Year Ended March, 1940.** Items of veterinary interest pp. 98–102. Ottawa. [8vo] [75 cents].

Work carried out at the Institute of Parasitology, Macdonald College, Quebec, is reviewed. The survey of parasites of sledge dogs in Arctic and sub-Arctic regions was extended. The prevalence of roundworms in pure-bred pigs is being studied with a view to obtaining data by routine faecal tests on :– (a) the effect of heavy infestations upon the growth and development of pigs, and (b) the period when infection is acquired, *i.e.* soon after birth, during the period of iron deficiency in penned pigs, during the weaning period, or when rickets is present.

Biochemical investigations at the Institute included work on enzyme inhibitors of *Ascaris*. Crude extracts of *Ascaris* have the property of neutralizing pepsin and trypsin, but have no action on papain or other plant proteinases, which have for this reason been employed as anthelminthics. It has been suggested that parasites exert an unfavourable effect on the host's nutrition through the enzyme inhibitors excreted into the alimentary tract. Investigation confirmed the findings of previous workers that inhibitors of pepsin and trypsin but not of papain are produced. Pepsin is inhibited only in its active range, *i.e.* in acid solution. Trypsin is affected only in alkaline or neutral media. The trypsin inhibitor appears to be a peptone or polypeptide, similar to those already discovered in egg-white, blood serum, and pancreas. It is suggested that the production of enzyme inhibitors is a phenomenon of general biological significance, wherever living cells are exposed to the influence of digestive enzymes.

Studies by SWALES on the action of phenothiazine as an anthelmintic in sheep resulted in methods being devised to determine phenothiazine and its derivatives in the blood, urine, and faeces of animals treated. These are being applied to study of the drug's anthelminthic action.

Existing collections of data on sheep parasites were used to determine methods of control. The free-living stages of the species of *Oesophagostomum* causing NODULAR DISEASE do not survive the winter months in Eastern Canada. This, correlated with the fact that the peak abundance of adult parasites occurs in ewes in March of each year, suggests that, theoretically, the removal of adults before the pasturing season would eliminate nodular disease ; this theory would also apply to haemonchosis and HOOKWORM DISEASE.

Phenothiazine treatment was found to be 100% effective against all stomach worms, and to approach complete efficiency against hookworms, nodular worms, *Cooperia* spp., and *Chabertia*. It is 80% efficient against *Trichostrongylus* spp., and in artificially infected sheep *Ostertagia ctrcumcincta* has been completely eliminated by small doses in the form of disintegrating tablets.

The incidence of TRICHINOSIS in 2,995 pigs examined was 0·57%. The incidence in those pigs fed cooked garbage (one-third of the total) was only 0·22%, showing that cooking of garbage is a sound method of control.—J. A. GRIFFITHS.

CANADA. (1941). **Province of British Columbia. Thirty-Sixth Annual Report of the Department of Agriculture for the Year 1941.** pp. Y136. Items of veterinary interest pp. Y66–Y77, Y83, Y84, Y88, Y106–Y107, Y132–Y133. Victoria, B.C. : Charles F. Banfield. [4to].

REPORT OF THE CHIEF VETERINARY INSPECTOR [KNIGHT, A.]—No serious epizootic occurred during the year. MASTITIS is controlled by sanitary measures imposed under the Milk Act. Cattle inspected numbered 62,750. Premises graded were "A" 467, "B" 2,661, "C" 130, and ungraded 349. Small outbreaks of BLACKLEG occurred. Carcasses were burnt or buried. Young in-contact cattle are given blackleg aggressin. The 4,329 cattle tested for TUBERCULOSIS showed only 12 reactors (0·28%). A few small outbreaks of HAEMORRHAGIC SEPTICAEMIA occurred. Treatment with sulphanilamide is said to have proved fairly effective. Mention is made of one outbreak of WHITE SCOURS in calves, with a heavy mortality and it is stated that 5 ml. of "colon bacillus" bacterin combined with serum yielded good results. An outbreak of FOOT ROT in sheep was reported from the Columbia Valley. In the Interior and Okanagan districts, where the disease used to be prevalent, 25,000 sheep inspected were free from the disease. ACTINOMYCOSIS was observed in dairy cattle in the lower part of the Fraser Valley and in the Interior district. Small outbreaks of COCCIDIOSIS occurred during the winter in calves in Interior district, especially in the Cariboo and Chilcotin areas. One outbreak of INFLUENZA in cattle was reported from the Pitt Meadow area.

In one flock, totalling 180 ewes and shearlings, 105 deaths followed the feeding of Timothy straw and other refuse throughout the winter. Mineral and other DEFICIENCY DISEASES have been noted in many districts. The use of alfalfa, clovers, and other leguminous crops is being extended beneficially for supplementary feeding.

POISONING by water hemlock caused some losses in the spring and ingestion of *Astragalus campestris* caused paralysis and loss from emaciation. *Triglochin maritimum* (salt marsh arrow grass) is apparently only poisonous in some areas, where it causes hydrocyanic acid poisoning. DERMATITIS, presumed to be due to photosensitization, was noted in cattle in west Ootsa lake district.

REPORT OF THE LIVESTOCK INSPECTOR [GUNN, W. R.]—The effect of MALNUTRITION on animal health is emphasized. This is particularly noticeable in HAEMORRHAGIC SEPTICAEMIA and COCCIDIOSIS. The possibility of other factors being concerned in losses among cattle with so-called "coccidiosis" is suggested. The sudden cessation of the epizootic and the rapid recovery of large numbers of animals after there has been an improvement in the ration or the pasture is significant. URETHRAL CALCULI occurring in range steers in the dry belt are thought to be associated with a high alkaline intake and a vitamin A deficiency in the pastures of the range. The water on the range is highly alkaline and there is a tendency to leave animals out too long when the autumn and early winter weather is mild. A few cases of EQUINE ENCEPHALOMYELITIS were reported.

A calf vaccine for BRUCELLOSIS is provided to control the disease. Vaccination is carried out by registered veterinarians. No blood test is required before vaccination, but facilities are provided if required, as in the Federal "accredited plan". Control of CASEOUS LYMPHADENITIS of sheep is by quarantine of infected flocks. Warble-fly control is carried out by giving two derris wash treatments at intervals of a month. 28,792 cattle were treated. Tests show that a standardized derris is a practical means of control of *Dermacentor andersonii* (the wood tick).

REPORT OF THE POULTRY BRANCH [TERRY, J. R.]—PULLORUM DISEASE blood tests are made of the poultry in the Fraser Valley, the Gulf Islands, Vancouver Island, and Okanagan district.

RESULTS OF POST-MORTEM EXAMINATIONS [BRUCE, E. M.]—An account is given of the work done, this covering the usual range of poultry and rabbit diseases. —J. A. GRIFFITHS.

BURMA. (1941). **Report on the Civil Veterinary Department for the Year ending the 31st March, 1941.** [RIPPON, S. R.] pp. 30. Rangoon : Supt. Govt. Printing & Stat. [8vo] [Rs. 1,4 = 1s. 11d.]

There were six class I staff posts, nine class II posts, 55 for veterinary inspectors, and 194 for veterinary assistants. There were 43 vacancies in the subordinate posts and one in class II. Over 37,000 cases were treated in the field, at the veterinary hospital, Insein, and at the veterinary dispensary at Tatkôn.

Only five districts out of 37 escaped outbreaks of

HAEMORRHAGIC SEPTICAEMIA, the total mortality being 5,289. ANTHRAX caused 1,105 deaths, BLACKLEG 294, SURRA 95, and RINDERPEST 4,293. FOOT AND MOUTH DISEASE was widespread with 81,940 cases, only four districts escaping infection. It was probable that many more cases did not come to the notice of the staff. There was no reported case of GLANDERS.

During the year, 532,908 cattle and buffaloes were inoculated with desiccated goat-spleen vaccine against RINDERPEST. A graph included in the report shows that during the last 35 years the disease has occurred in waves, with peaks about every 6–7 years. 30,906 animals were given HAEMORRHAGIC SEPTICAEMIA vaccine. ANTHRAX spore vaccine inoculations numbered 8,849 in bovines, 214 in equines and 224 in elephants. 4,000 elephants were also inoculated against ANTHRAX by non-government agencies. An additional 73,467 bovines were immunized simultaneously against anthrax and H.S. STRANGLES autogenous vaccine was given to 75 ponies at the Pyawbwe stud farm. 207 cattle, mostly at the cattle breeding farm, Tatkôn, were vaccinated against BLACKLEG.

At the veterinary laboratory at Insein, 1,115 blood smears, 759 samples of faeces, and 452 other pathological specimens were examined. The doses of vaccines issued were :– HAEMORRHAGIC SEPTICAEMIA vaccine 130,148, ANTHRAX spore vaccine 86,955, BLACKLEG vaccine 800, and RINDERPEST desiccated goat spleen vaccine 687,400. RINDERPEST serum, mallein, tuberculin, and other biological products were also issued.

The results obtained in the field with HAEMORRHAGIC SEPTICAEMIA vaccine were very encouraging. It was thought that the presence of many inoculated cattle cut short outbreaks and prevented the bacilli from attaining great virulence. The ANTHRAX spore vaccine continued to be very successful. Only two uninoculated elephants died of ANTHRAX in the year. ENCEPHALITIS in a bovine and in dogs with a histopathology very similar to that of KUMRI is described. [A report of many years' research on kumri has been abstracted separately—see *V. B.* **12.** 546.]

There is a chapter on stock breeding and a summary which discusses and makes recommendations for dealing with the local difficulties in combating diseases of animals in Burma.

Instruction at the veterinary college at Insein continued. Two Burman students were training in the Indian veterinary colleges, and one Burman student in London qualified.—M. H. KYAW.

SOUTHERN RHODESIA. (1940). **Report of the Division of Entomology for the Year ending 31st December, 1939.** [JACK, R. W.] pp. 35. [Typescript].

The report includes an account of the year's progress in eradication of *Glossina morsitans*. The areas already cleared of tsetse have been successfully maintained and are being settled, and the fly density has been reduced to vanishing point in further extensive areas where eradication schemes are in progress. A detailed account of the position for each district is given ; the principal areas of activity are (1) in the extreme north, where the fly has been pushed back to the south escarpment of the Zambesi valley, (2) in the west, where eradication and settlement are advancing steadily westwards into the plains, and (3) on the border of Portuguese East Africa, where the threatened advance of tsetse into Southern Rhodesia appears to have been largely checked by clearing measures, trapping, and game control.—J. MACLEOD.

SIERRA LEONE. (1942). **Annual Report of the Department of Agriculture For the Year 1940.** pp. 10. Items of veterinary interest p. 8. Freetown : Govt. Printer. [8vo].

A veterinary officer, J. B. BEST, seconded from Nigeria, made a two-months' survey of the animal diseases of the colony. The colony is still largely dependent on imports for its meat supply. War conditions and military requirements have strained the country's resources and shown up the need of fostering the cattle industry. Best estimated the numbers of cattle as 80,000 to 100,000.

A FOWL TYPHOID epizootic seriously depleted the numbers of poultry during the year. Attacks by *Stomoxys* in large numbers cause loss of condition in cattle in the months of August and September. Species mentioned are *S. nigra* and *S. calcitrans*. The presence of tsetse fly is recorded on the Tekaw stock farm. *Glossina palpalis* and *G. fusca* were identified. Other conditions diagnosed were FOOT ROT during the wet months, ANAPLASMOSIS, TRYPANOSOMIASIS, BOVINE BILHARZIASIS, and *Haemonchus contortus* and LIVER FLUKE INFESTATIONS.

Pig breeding is being fostered by the department. —J. A. GRIFFITHS.

CYPRUS. (1941). **Annual Report of the Director of Agriculture for the Year 1940.** Items of veterinary interest p. 3. Nicosia : Govt. Printing Office. [fcp] [3 piastres].

Investigations included transmission experiments with the virus of THREE-DAY SICKNESS of cattle, the study of a very mild form of FOWL CHOLERA and of cases of PIROPLASMOSIS in sheep, and the continuation of the survey of parasites of domestic and wild animals. The laboratory issued over 700,000 doses of ANTHRAX vaccine.—H. E. HARBOUR.

U.S.A. (1940). **Report of the Chief of the Bureau of Entomology and Plant Quarantine, 1940.** Items of veterinary interest pp. 91–96 and 103–109. Washington, D.C. : U.S. Govt. Printing Office. [8vo] [15 cents].

Work on screwworms and blowflies resulted in the application of diphenylamine as a valuable repellent and larvicide when applied to wounds. It has been recommended for general use by farmers. Its effects last for 14 days. As a larvicide and ovicide for screwworms, benzene containing 5 or 10% thiophene, or 10% naphthalene, and undiluted toluene was [? were] found to be superior to undiluted benzene alone.

An automatically operated horn-fly (*Lyperosia irritans*) trap has been found to be very effective, tests showing that infestations were reduced from 3,000 or more flies per head to about 200 flies per head on cattle using the traps. Rotenone was found to be effective in killing the larvae of the fly in bovine faeces, but it is too expensive for general use.

Sulphur-cube-root dip applied twice at intervals of 17–19 days reduced warbles infestation of cattle by 67%.

Research on wetting agents for sulphur dips for the control of goat lice showed that it is advisable to use two or three such agents together. The short-nosed ox louse (*Haematopinus eurysternus*) was effectively controlled by sulphur-cube root dip. Sulphur fed to cattle for long periods was shown to have no effect on ectoparasites. Numerous substances were tested for value as fly repellents for byres, but few were of any value. Pyrethrum in kerosene makes a good home-mixed spray.

Nicotine sulphate sprays were effective in killing ticks congregated on vegetation along pathways. Meadow mice were found to be more important than rabbits as hosts for immature ticks which parasitize dogs and man. Light petroleum oil kills the brown winter tick, *Dermacentor nigrolineatus*.

Basic research into the nature and properties of derris, cube root, and pyrethrum, and on new substances with insecticidal properties, is briefly discussed.—J. E.

Extracts from Annual Reports of Agricultural Experiment Stations, U.S.A. [The matter given here is a bare outline of the work done. When papers by the staffs of these stations are published, abstracts are prepared from them and included in the *Veterinary Bulletin* as a matter of routine. Details of the titles of these reports and of relevant papers contained in them will be found in *Index Veterinarius*].

HAWAII, 1940.—A mixture of 10 g. hexachlorethane and 1·75 g. kamala in capsule, given at a dose of one capsule per 70 lb. body weight, was found to be excellent for LIVER FLUKE INFESTATION in cattle. Progress was made in estimating the number of liver flukes from faecal egg counts: it was found that one adult fluke was responsible for an egg-count figure of 0·47–1·4 eggs per gramme, the mean being 1·013 ± 0·108. Work was begun on the biological control of snail hosts. Animal protein supplements were found valuable for reducing tapeworm burden in fowls. FOWL-POX vaccination trials in day-old chicks gave poor results, as mortality was greater in vaccinated than in control birds.

MARYLAND, 1939–40.—Although the station herd is free from BRUCELLOSIS, there have been 5% of abortions during the period 1931–39. Some evidence of a hereditary tendency to abortion was obtained. Twenty herds were under supervision for calfhood vaccination, and the experiences are summarized. Notes are given on current research on bovine TRICHOMONIASIS, bovine PYELONEPHRITIS, BLACKHEAD in turkeys, EQUINE ENCEPHALOMYELITIS, EQUINE PERIODIC OPHTHALMIA, and "RUNNING FITS" in dogs. An equine pregnancy diagnosis service was in operation. Progress was made in the production of PULLORUM-resistant Rhode Island Red fowls. Some nutritional studies on fowls are also reported.

MASSACHUSETTS, 1939–40.—Progress in the very large-scale PULLORUM DISEASE control work is outlined. There were 280 clean flocks with 460,000 birds in the state. A table shows the main features of the poultry P.M. examination service. A list is given of 14 distinct strains of salmonella isolated from poultry. *S. pullorum* was found to have remained viable for seven years and eight months on dry cloth, but not for eight years and three months. Reactor male birds did not transmit *S. pullorum* to non-reactor females when they were penned together for nine months. Studies are described on AVIAN ENCEPHALOMYELITIS and on a transmissible lymphoid tumour in fowls. FOWL POX infection was diagnosed in a ruffed grouse.

MINNESOTA, 1939–40.—Research projects were completed and papers have been published [references given] on ECHINOCOCCOSIS, SWINE FEVER, and BOVINE BRUCELLOSIS.

NEBRASKA, 1939–40.—Much work was done on the titration of SWINE ERYSIPELAS antiserum, a numerically calculated method being worked out in conjunction with the usual pigeon test method. Results of immunization of 864 herds containing 63,000 swine are analysed. Progress was made in work on the use of ultraviolet ray lamps in poultry houses with the object of preventing RICKETS and simultaneously of enabling fish oil supplements to be dispensed with. Avian blood studies were begun.

NEW HAMPSHIRE, 1940.—Work on bovine MASTITIS was confined mostly to studies on staphylococci and their toxins. An attempt to isolate a specific bacteriophage with curative properties failed. The causes of ruptured egg-yolk in hens were studied, without much progress being made. GIZZARD EROSION was found to be widespread. Work on poultry disease control is summarized.

NEW YORK, 1940.—Anthelmintic treatment of mares at the fourth and seventh month of pregnancy (CCl_4 in $MgSO_4$) diminished the worm "pick-up" of their foals. A copper sulphate, nicotine sulphate solution was more effective than tetrachlorethylene in removing intestinal worms from 30 experimental sheep. Further progress was made in breeding disease-resistant fowls. Temporarily infertile cows, kept on moderate feed and rested, recovered breeding activity just as well as similar cows treated with anterior pituitary hormones.

NORTH CAROLINA, 1939–40.—Progress was made in breeding disease-resistant poultry. Tapeworms are prevalent in fowls: the role of beetles in this connexion is referred to. Copper sulphate and nicotine sulphate mixture was found to be as efficacious as phenothiazine as an anthelmintic for sheep.

RHODE ISLAND, 1940–41.—Characteristics of two strains of AVIAN INFECTIOUS BRONCHITIS virus after over 100 egg passages are described. Chemotherapeutic trials in AVIAN INFECTIOUS CORYZA (*Haemophilus* infection) were disappointing. Infection due to the virus of EQUINE ENCEPHALOMYELITIS was diagnosed in pheasants.—J. E.

***ESTONIA. (1940). [Report of the Diagnostic Work of the State Serum Institute for 1939].** [SIKKUT, M., & LIND, H.]—*Eesti loomaarstl. Ring.* **16.** 155–164. [In Estonian] [Abst. from abst. in *Jber. Vet.-Med.* **68.** 78].

During 1939, 17,319 bacteriological and pathological samples were examined at the institute. More than 10,000 of these were blood samples from cattle which were tested for BRUCELLOSIS by the simultaneous use of the agglutination and complement-fixation tests. It was found that the two methods were equally efficient. Of 612 samples of sputum from cows suspected of TUBERCULOSIS, 96 gave positive results, whilst 15 out of 1,190 milk samples contained tubercle bacilli. Five specimens suspected of RABIES in which no Negri bodies could be demonstrated were positive on rabbit inoculation.

Details are given on the incidence of diseases diagnosed P.M. in pigs and piglets, foals, sheep, carnivores, poultry, and bees.—M. LANDAU.

BOOK REVIEW

—. (1940). The Era Key to the USP XI & NF VI. [Revised by FONDA, L. D., Professor of Pharmacy, Brooklyn College of Pharmacy, Long Island University]. pp. 320. Newark, N.J.: Haynes & George Co., Inc. [5th Edit.] [8vo] [$1.00].

The object of this pocket epitome of the most essential information contained in the United States Pharmacopoeia and National Formulary, is to provide a rapid reference for students of pharmacy and medicine, and to aid prescribing by physicians and dispensing by pharmacists. The preparations are listed in alphabetical order with synonyms, description, therapeutic properties, and average doses.

The first edition was published in 1893 and the fourth edition appeared in 1929. This fifth edition has been enlarged to include a glossary of common technical terms, a table of maximum doses and additional information on incompatibles, non-official materia medica, Latin phrases, and abbreviations.—H. H. GREEN.

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